USSR UDC 621.372.81

SMORGONSKIY, V. Ya. and ILARIONOV, Yu. A.

"Method for Computing the Critical Frequencies in a Circular Waveguide With a Dielectric Sleeve"

Kiev, Izvestiya VUZ--Radioelektronika, vol. 14, No. 7, 1971, pp 736-742

Abstract: The purpose of this article is to make up for the deficiencies of investigations in a similar direction by earlier researchers. An approximate method is proposed for analyzing the critical conditions when the dielectric sleeve of the waveguide is of arbitrary thickness and its permeability varies within wide limits. By this method, the change in the mutual position of the critical frequencies of the higher type of waves observed for some range of values of a/b, where a is the radius of the inner section of the waveguide and b is the radius of the outer skin (thus (b - a) is the thickness of the dielectric sleeve) for a permeability greater than 5.17. The method given is particularly applicable to permeabilities greater than 5, and is accurate enough for engineering requirements to be followed without using a computer. Values for the permeability and the a/b ratio for which the critical frequencies of E_{01} and $(HE)_{21}$ are equal, are found.

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UDC 621.372.853.1

USSR

SMORGONSKIY, V. Ya.

"Calculating Critical Frequencies in an Elliptical Waveguide with a Dielectric Insert"

Tr. Gor'kovsk. politekhn. in-ta (Works of the "Gor'kiy Polytechnical Institute), 1969, 25, No 3, pp 5-8 (from RZh-Radiotekhnika, No 1, Jan 70, Abstract No 1B99, G. B.)

Translation: The critical conditions in an elliptical waveguide with a dielectric insert are studied. An analysis is presented for the case where the insert and the outside surface of the waveguide are confocal ellipses. The dispersion equation is compiled the solution of which is in the form of a series of products of modified and angular Mathieu functions. The critical lengths of higher type waves are presented as functions of the eccentricity of the inside surface of the insert with $\xi = 5$ and $\delta = 20$. There are two illustrations and a five-entry bibliography.

1/1

USSR UDC 621.372.823.09.001.24:621.371.372

BELOZEROV, YU.S., ILANIONOV, YU.A., SHCHEGOVSHIY, V.YA.

"On The Problem Of The Calculation Of The Critical Frequencies Of Higher-Type Waves In A Hollow Elliptical Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1300-1302

Abstract: The paper considers some distinctive features connected with determination of the critical frequencies of wave of high order and the change of their mutual disposition at any eccentricity. A graph is shown of the dependence of the critical wave numbers of an elliptical waveguide on the eccentricity. 1 fig. 8 ref. Received by editors, 14 April 1971.

1/1

USSR

UDC 621.372.825

RAYEVSKIY, S.B., SMORGONSKIY, V.YA.

"Dispersion Equation Of Elliptical Corrugated Waveguide"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1297-1300

Abstract: The paper is devoted to formulation of a dispersion equation for even HE^{e} waves in an elliptical waveguide with a rectangular corrugation. The even wave HE^{e}_{11} is the dominant wave of such a waveguide. The longitudinal and cross sections are shown of the waveguide under consideration. 1 fig. 4 ref.
Received by editors, 29 March 1971.

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USSR UDC 621.372.853.1

SVORCONSKIY, V.YA.

"Analysis Of The Dispersion Equation Of A Two-Layer Elliptical Waveguide In A Critical Regime"

Radiotekhnika i elektronika, Vol XVII, No 6, June 1972, pp 1302-1305

Abstract: This paper is concerned with calculation of the critical frequencies for a waveguide with a dielectric lining [vtulka], and with an analysis of a dispersion equation with an unrestricted change of the parameter b_1. 1 fig. 3 ref. Received by editors, 26 April 1971.

1/1

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--SEPARATION OF MONORIBONUCLEOTIDES ON THE ANION EXCHANGER AV-17 -U-

AUTHOR-(05)-ULASTE, V., LAZDINS, I., BANDERE, R., SMORODINA, I.V., AVOTS, A.

COUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(1), 90-4

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--YEAST, NUCLEOTIDE, RNA, ION EXCHANGE CHROMATOGRAPHY/(U)AV17 ANION EXCHANGER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0611 STEP NO--UR/0411/70/006/001/0090/0094

CIRC ACCESSION NO--AP0117839

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117839

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALK. HYDROLYZATES OF YEAST RNA WERE SEPD. WITH A HCL GRADIENT ON THE ANION EXCHANGER AV-17 IN THE CL PRIME NEGATIVE FORM (CROSS SECTIONAL AREA OF THE COLUMN 0.07 CM PRIME2, HEIGHT 4-6 CM, AMT. OF RNA HYDROLYZATE SEPD. 10-20PERCENT OF THE EXCHANGER CAPACITY, ELUTION VELOCITY IS SIMILIAR TO 3 ML-MIN-CM PRIME2). TO IMPROVE THE SEPN. PROCESS EQUATIONS WERE DERIVED WHICH RELATE THE SEPN. CAPACITY AND QUALITY TO THE ELUTION RATE, GRADIENT CHARACTERISTIC, AND AMT. OF HYDROLYZATE INTRODUCED. FACILITY: INST. ORG. SYN., RIGA, USSR.

UNCLASSIFIED

USSR

UDC 546.623'882'5

FEDOROV, N. F., ANDREYEV, I. F., KASPARYAN, R. M., and SMORODINA, T. P.

"Phase Equilibria in the System Al_2O_3-Nb_2O_5"

Moscow, Neorganicheskiye Materialy, Vol 7, No 4, Apr 71, pp 643-647

Abstract: The phase diagram of the Al_2O_3-Nb_2O_5 system was constructed. The system contains three individual compounds. $AlNbO_4$, $AlNb_{11}O_{29}$, and $AlNb_{49}O_{124}$. The first compound melts with decomposition at 1569°C, the two others -- without decomposition -- at 1450 and 1460°C, respectively. The peritectic has a composition equal to 65 mol.% Nb_2O_5 + 35 mol.% Al_2O_3, while the eutectic corresponds to a composition of 73 mol.% Nb_2O_5 + 27 mol.% Al_2O_3 at 1425°C and 95 mol.% Nb_2O_5 + 5 mol.% Al_2O_3 at 1435°C.

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USSR

UDC: 669.71.472

FORSBLOM, G. V., SEMENOV, V. S., SMORODINOV, A. N., PARAMONOV, S. A., BARABANOV, P. S.

"Artificial Cooling as a Method of Intensification of the Operation of Aluminum Electrolyzers"

Tr. Vses. N.-I. i Proyekt. In-ta Alyumin., Magn. i Elektrod. Prom-sti [Works of All-Union Scientific Research and Planning Institute for the Aluminum, Magnesium and Electrode Industry], 1972, No 82, pp 15-25 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G169, by G. Svodtseva).

Translation: Tests were performed at one plant of a group of electrolyzers, equipped with various artificial cooling systems. The effectiveness of the cooling was estimated on the basis of full thermal and energy balances. The maximum increase in thermal losses amounted to 50-55,000 watts. The increase in yield per current in cooled electrolyzers was facilitated by thicker and more constant linings. The transfer of metal in cooled electrolyzers was 1.5-2 cm less than in ordinary electrolyzers. The mean parameters of the technological mode and data on the yield per current and consumption of electric power are presented. The use of a forced electrolyzer can facilitate the

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USSR

Forsblom, G. V., Semenov, V. S., Smorodinov, A. N., Paramonov, S. A., Barabanov, P. S., Tr. Vses. N.-I. i Proyekt. In-ta Alyumin., Magn. i Elektrod. Prom-sti, 1972, No 82, pp 15-25.

solution of the important economic problem of utilization of daily and seasonal excesses in electric power plant capacity.

2/2

USSR

UDC 669.713

SMORODINOV, A. N., and KOROBOV, M. A.

"Degree of Intensification and Intensity of Energy Mode of Aluminum Electrolyzers"

Moscow, Tsvetnyye Metally, No 11, Nov 70, pp 33-36

Abstract: The two most common methods used to compare the results of the operation of aluminum electrolyzers are the amount of metal removed per unit area of various surface areas, and comparison of current density from the various areas. When the current density method is used, the yield per unit current is not taken into consideration. When either method is used, the selection of the area by which productivity or current is divided is significant. The correct approach is evaluation on the basis of the most stable area: the area of the cathode jacket or the maximum design anode area. However, even this will not guarantee full comparability of results. The primary factors decreasing comparability of results are: decrease of the "specific perimeter" and decrease in current density with an increase in space in between the poles or an increase in anode area. Formulas are suggested to consider these factors to improve comparability of results.

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USSR

UDC 669.713.1

SMORODINOV, A. N., and KOROBOV, M. A.

"Consumption of Anodic Mass As a Function of Current Density and Geometrical Dimensions of Aluminum Electrolyzers"

Moscow, Tsvetnyye Metally, No 9, Sep 70, pp 24-26

Abstract: The effect of anodic current density on the quality of the anode and expenditure of the anodic mass have been the subject of earlier studies under laboratory conditions. In these studies, however, the chemical oxidation of the anode was ignored and consequently the effects of current density on both the thermal load of the anode and its consumption were not considered. The dependence of anode consumption on current density is of particular importance in determining the optimum current density of aluminum electrolyzers. In industrial practice, anodic mass consumption is related to one ton of produced metal. Such determination is appropriate

USSR

SMORODINOV, A. N., and KOROBOV, M. A., Tsvetnyye Metally, No 9, Sep 70, pp 24-26

for economic assessments of electrolysis results but cannot always serve as a criterion for evaluating the quality of the anode since anode consumption is a function of current efficiency. Formulas derived in this study make it possible to calculate with reasonable accuracy the consumption of anodic mass for electrolyzers of various sizes presently in the design stage and those in operation under various conditions as well as to perform appropriate calculations of optimum operating conditions for aluminum electrolyzers.

SMORODINOV, M. I.

TECHNICAL TRANSLATION

FSTC-HT-23- 889-71

ENGLISH TITLE: Design and Testing of a Radiometric Densimeter

FOREIGN TITLE: Konstruirovaniye I Ispytaniye Radiometricheskogo Plotnomera

AUTHOR: M.I. Smorodinov and A. A. Morozov

SOURCE: NAUCHNO ISSLEDOVATEL'SKIY INSTITUT OSNOVANIY I PODZEMNYKH SOORUZHENIY. SBORNIK TRUDOV, NR. 57 1967. OSNOVANIYA I FUNDAMENTY

Translated for FSTC by Leo Kanner Associates

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SMORODINOVA, O.G.

COMPUTERS

NEW BOOKS

6800189

Homogeneous Microelectronic Associative Processors

I. V. Prangishvili, G. M. Popova, O. G. Smorodinova, A. A. Chudin. *Od-
norodnye mikroelektronnye assotsiativnye protsessory*, Sovetskoe radio, Mos-
cow, 280 pp. The principles of constructing a homogeneous associative paral-
lel processor used for solving a wide class of problems involving batch proc-
essing of information is described. This processor has three times the produc-
tivity and much greater efficiency than modern computers.
Methods of executing arithmetic, logic, and relational operations using
the processor are described, and appropriate algorithms and programs are
presented. Examples of solving various problems via the processor are exam-
ined and comparative evaluations of the times required for their solution
using the processor and ordinary computers are given. Problems which lend
themselves to batch processing, including pattern recognition, classification,
and identification, and situations involving economic planning and manage-
ment, medical and technical diagnostics, radar and sonar, weather forecast-
ing, etc., are discussed.
A survey is made of some of the more interesting foreign work on the
construction of associative parallel processors. Current capabilities of micro-
electronics for the execution of these processors using LIC are examined.
The book will be of interest to a wide range of engineering, technical, and
scientific personnel, and to students of higher educational institutions who
are interested in computers, engineering cybernetics, and microelectronics.

Printed Circuits in Instrument Design, Computer Technology, and Automation

A. T. Belytsova (ed.). *Pechatnye skhemy v priborostroenii, vychislitel'noj
tekhnike i avtomatike*, Mashinostroenie, Moscow, 1973, 269 pp. A systematic
description of the basic problems of design, production technology, and use
of printed circuits is presented in this book. The most advanced experience
and achievements of domestic and foreign technology are included. Materi-
als used for the production of printed circuits; methods of preparing the
prototypes of these circuits; special features of constructing printed circuits,
including analysis of the basic design-engineering problems and design ver-
sions, are described in detail. Much attention is devoted to the design of
printed circuit conductors and basic printed elements for lower and higher
frequencies. In examining the problems of manufacturing printed plates, a
step by step description is presented of plate production, design of printed

1/2 046 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF MOTION ENERGY DISSIPATION ON HEAT TRANSFER WITH LAMINAR FLOW OF NON NEWTONIAN FLUIDS IN CIRCULAR TUBES -U-

AUTHOR-(02)-FROYSHTETER, G.B., SMORODINSKIY, E.L.

COUNTRY OF INFO--USSR

SOURCE--INZHENERNO-FIZICHESKIY ZHURNAL, 1970, VOL 18, NR 1, PP 68-76

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HEAT TRANSFER, LAMINAR FLOW, FLUID FLOW

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0687 STEP NO--UR/0170/70/018/001/0068/0076

CIRC ACCESSION NO--AP0121348

UNCLASSIFIED

2/2 046 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121348

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIG. 1. VARIATION OF LOCAL NU NUMBER ALONG TUBE LENGTH (SOLID LINES M EQUALS 2; DASHED LINES, M EQUALS 5. FIGURES NEAR CURVES, VALUES OF BETA) FIG. 2. LENGTH OF INITIAL THERMAL SECTION L SUBHT AGAINST PARAMTER BETA. FIG. 3. MEAN BAR NU NUMBER VARIATION ALONG TUBE LENGTH OF M EQUALS 2 (SOLID LINES, BY FORMULA (16); DASHED, BY (18); FIGURES NEAR CURVES, VALUES OF BETA). FIG. 4. LIMIT VALUE OF BETA 5PERCENT ACCOUNTING FOR ENERGY DISSIPATION (SOLID LINES, BY FORMULA (16); DASHED, BY (18); FIGURES NEAR CURVES, VALUES OF M). SUMMARY. AN ANALYTIC SOLUTION TO THE PROBLEM OF HEAT TRANSFER IN A LAMINAR FLOW OF NON NEWTONIAN FLUIDS IN CIRCULAR TUBES WITH ACCOUNT FOR MOTION ENERGY DISSIPATION IS OBTAINED. THE RELATIONSHIPS BETWEEN THE LENGTH OF THE INITIAL THERMAL SECTION AND DISSIPATIVE FACTOR ARE PRESENTED AND IT IS ESTABLISHED THAT THE DECREASE IN THE INITIAL LENGTH WITH INCREASING BETA IS VALID ONLY WITHIN CERTAIN RANGES OF BETA VARIATION.

UNCLASSIFIED

USSR

UDC: 512.8+53

SMORODINSKIY, Ya. A., SHELEPIN, L. A., Joint Institute of Nuclear Research, Dubna; Physics Institute imeni P. N. Lebedev, Academy of Sciences of the USSR

"Clebsch-Gordan Coefficients from Various Standpoints"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 106, No 1, Jan 72, pp 3-45

Abstract: Recent years have seen the development of a generalized theory of angular moments. New results have appreciably changed the place of Clebsch-Gordan coefficients in both physical and mathematical applications. This survey reviews two aspects of the theory of Clebsch-Gordan coefficients which has arisen as an applied branch of group theory. First, a study is made of the relation between Clebsch-Gordan coefficients and combinatorial theory, the calculus of finite differences, special functions, complex moments, projective and multidimensional geometry, topology, multiple integrals, and various other branches of mathematics. In these areas,

USSR

SMORODINSKIY, Ya. A., SHELEPIN, L. A., Uspekhi Fizicheskikh Nauk, No 1, Jan 72, pp 3-45

the Clebsch-Gordan coefficients play the part of a new universal calculus which goes considerably beyond the primary framework of the theory of angular moments. Secondly, new applications are considered for the Clebsch-Gordan coefficients in physics. With the aid of the generalized theory of angular moments, which is an adequate tool for studying various physical systems (atoms, molecules, nuclei, hadrons, radiation), a study is made of the interrelationships between physical symmetries. As an example, it is shown how this theory can be applied to elementary particle symmetries. A supplement to the article gives a brief summary of the results on the theory of Clebsch-Gordan coefficients of compact groups. Seven figures, bibliography of 168 titles.

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USSR

SMORODINSKIY, Ya. A. and KHUSAR, M., Joint Institute of Nuclear Research; Central Institute of Physical Research, Budapest)

"Representations of the Lorentz Group and the Generalization of Helical States"

Moscow, Teoreticheskaya i Matematicheskaya Fizika (Theoretical and Mathematical Physics), Vol 4, No. 3, p 328-340, September 1970

Abstract: Unitary representations of the Lorentz group are constructed with the aid of parameters that correspond to generators satisfying Lie algebra equations for two independent angular moments. The Lorentz group elements are expanded by selecting three Cartesian coordinate axes, x_1, x_2, x_3 and determining a complex representation consisting of rotation about an axis and the Lorentz representation along the same axis. Any Lorentz group element can be represented as the result of three such complex transformations with respect to x_3, x_1, and x_3 again. These operations can also be described as two sequential rotations to complex Euler angles and to angles complexly conjugate to them. The subgroup of spatial rotations is obtained when the imaginary parts of the complex Euler angles are set to zero. The real parts of the Euler angles are viewed as coordinates on the surface of a real three-dimensional sphere. A system of functions is

USSR

SMORODINSKIY, Ya. A., et al, Teoreticheskaya i Matematicheskaya Fizika, Vol. 4, No. 3, p 328-340, September 1970

obtained for the Lorentz group representations as dependent on six parameters. The relation between these representations and the expansion of the scattering amplitude is discussed. The matrix elements of the representation are derived, the behavior of the singular points is discussed, and the functions on the group are subjected to harmonic analysis. The asymptotic equation for the R function is used to obtain a relation for orthogonality and completeness, which includes a measure for the representation in terms of the delta function on the group. The spherical functions of group G with respect to subgroup H are determined on the homogeneous space $S_{G/H}$, which has a fixed point and in which group H is small. The subgroup H, consisting of spatial rotations about the third axis, and the Lorentz transformation along the axis are considered. A two-dimensional complex sphere is constructed that has all of the properties necessary for determining the spherical functions. When the infinitesimal generators are written in the form of differential operators, Casimir operators are obtained for which the spherical functions are eigenfunctions. The authors thank M. A. Liberman and M. B. Sheftel for valuable discussions. Orig. art. has 11 refs.

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USSR

SMORODINSKIY, Ya. A., and SHEPELEV, G. I.

"Boost Matrix Elements in O(3,1) and Continuation to O(4)"

Moscow, Yadernaya Fizika, Vol 13, No 2, 1971, pp 441-453

Abstract: Friedman and Wong (Phys. Rev., 160, 1560, 1967) have found a formula for the matrix of finite rotation of the group O(4) in the form of a Fourier series with coefficients equal to the product of the Clebsh-Gordan coefficients. This indicated to the authors that expressions in the form of double sums produced for Lorentz groups might also be reduced to a form similar to the Friendman-Wong formula. The angular momenta in this case are continued into the complex area, and the Fourier series is replaced by a Fourier integral. Since the expansion of the amplitudes of scattering by matrix elements of the O(3,1) and O(4) representations can be continued in each other, these groups are looked upon as groups of symmetry of the scattering amplitude. Proof of the continuation of the matrix elements in each other is given. An expression is also presented for the transformation of spinors with hyperbolic rotation.

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USSR

SMORODINSKIY, YA. A.

"Notion of Planets"

Moscow, Kvant, Zhurnal Akademii Nauk SSSR and Akademii Pedagogicheskikh Nauk SSSR, No 1, 1971, pp 20-27

Abstract: This article, written in popular science format and intended for the lay reader, discusses several properties of an ellipse and various laws governing the motion of planets, chief of which are the laws of Kepler.

Starting with a simplified description of the force of gravity, the article continues through the law of conservation of angular momentum; conservation of energy; Kepler's first, second, and third laws; and definitions of an ellipse and velocity as pertain to the motion of planets. Each description is accompanied by equations that are solved and discussed.

The article is profusely illustrated with nine figures, all in color, depicting the examples cited above. Several problems

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USSR

SMORODINSKIY, YA. A., Kvant, Zhurnal Akademii Nauk SSSR and Akademii Pedagogicheskikh Nauk SSSR, No 1, 1971, pp 20-27

are given at the end for the reader to solve, based on the material contained therein.

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1/2 080 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--PROGRESS OF HOLOGRAPHY -U-

AUTHOR-(02)-SMORODINSKIY, YA.A., SOROKO, L.M.

COUNTRY OF INFO--USSR

SOURCE--PROGRESS OF HOLOGRAPHY (USPEKHI GOLOGRAFII) MOSCOW, ZNANIYE, 1970, 46 PP

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, METHODS AND EQUIPMENT

TOPIC TAGS--HOLOGRAPHY, PHOTOGRAPHIC IMAGE, CAMERA COMPONENT, PHOTOGRAPHIC LENS, OPTIC PROPERTY, OPTIC GLASS, RADAR PULSE, STEREOSCOPIC PHOTOGRAPHY, STEREOSCOPIC DISPLAY SYSTEM, HOLOGRAM, LIGHT INTERFERENCE, COHERENT LIGHT, LASER APPLICATION, LASER BEAM, LASER RADIATION INTERFEROMETER

CONTROL MARKING--NO RESTRICTIONS

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CIRC ACCESSION NO--AM0133903

UNCLASSIFIED

2/2 080 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AM0133903

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMATION OF A PHOTOGRAPHIC IMAGE 5. CAMERA LENSE AND CAMERA OBSCURA 6. A LENS PHOTOGRAPH CAN'T REPLACE THE LENS 7. PLANE EQUIVALENT OF THE LENS 8. PHOTOGRAPHY THROUGH FROSTED GLASS 10. RADAR DETERMINES THE DISTANCE OF THE TARGET 11. STEREOSCOPIC PHOTOGRAPHY 12. SCREEN STEREOSCOPIC POSTCARDS 12. INTEGRAL SCREEN PHOTOGRAPHY 14. PSEUDOSCOPY 15. THE HOLOGRAM 16. LIGHT INTERFERENCE 17. LIGHT COHERENCE 18. SPACE COHERENCE 19. TIME COHERENCE 21. THREE DIMENSIONAL INTERFEROGRAM OF A DUST PARTICLE 23. HOLOGRAM OF A DUST PARTICLE 25. RESTORATION STAGE. A TRUE OR A VIRTUAL IMAGE? 26. DIMENSIONALITY IN A PLANE HOLOGRAM 26. SINUSOIDAL DIFFRACTION GRID 27. AMPLITUDE AND PHASE INFORMATION 28. THE POSSIBILITY OF A COMPLETE TEST IN OPTICS 28. PROPERTIES OF A HOLOGRAM 29. COLOR HOLOGRAM 30. AGAIN ABOUT COHERENCE 31. LASER BEAM 32. AN OPTICAL RADIO STATION 34. ARTIFICIAL HOLOGRAM 36. INTENSITY INTERFEROMETER 37. ADHESION OF PHOTONS 39. VOLUME OF AN ELEMENTARY CELL OF A BEAM OF LIGHT 40. LASER BEAM AND THERMAL RADIATION 41. THEORY OF THE INTENSITY INTERFEROMETER 42. INTERFERENCE OF RADIO QUANTA ON A MAGNETIC TAPE 42. INTERFERENCE OF SINGLE QUANTA 43. LASER HOLOGRAPHY THROUGH FROSTED GLASS 44. HOLOGRAPHIC THREE DIMENSIONAL TELEVISION 45. MAGIC GRAININESS OF LASER ILLUMINATION 46.

UNCLASSIFIED

USSR

SMORODINSKIY, YA. A.

"Ideal Gas"

Moscow, Kvant, No 10, 1970, pp 22-27

Abstract: The author begins his description of this physical concept with some little-known history of gas theory. He mentions the work of Waterston who showed, in 1845, that the pressure of a gas on the walls of its container can be explained by the impacts of the gas atoms on those walls. This theory was greeted with skepticism when presented to the Royal Society and was buried in oblivion until resurrected by Rayleigh in 1892. According to Rayleigh, Waterston's achievement would have been properly evaluated if he had cited the observation of Daniel Bernoulli in 1727 on the connection between gas pressure and the square of the gas particle velocity. The author of the present article discusses the Boyle-Mariotte law, the Clapeyron equation, the relation between the kinetic energy of gas molecules and the temperature, and Dalton's law. The article concludes with three problems for the reader to solve.
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USSR

(3)

UDC 615.281.8:547.963.32

AKSENOV, O. A., TIMKOVSKIY, A. L., AGEYEVA, O. N., KOGAN, F. M., BRESLER, S. Ye., SMORODINTSEV, Al. A., and TIKHOMIROVA-SIDOROVA, N. S., All-Union Scientific Research Influenza Institute, Ministry of Public Health USSR, Institute of Nuclear Physics, Academy of Sciences USSR, and Institute of High Molecular Weight Compounds, Academy of Sciences USSR, Leningrad

"Interferonogenic and Antiviral Activity of Double-Stranded Polyriboguanilic and Polyribocytidylic Acid Complex"

Moscow, Voprosy Virusologii, No 3, May/Jun 1973, pp 345-350

Abstract: The interferonogenic and antiviral activity and toxicity of (poly-G)·(poly-C) complexes produced by two methods were compared with those of (poly-I)·(poly-C). Stable complexes were formed both by adding NaCl (0.1M) to an equimolar solution of poly-G and poly-C in 0.005M sodium phosphate buffer (pH 7.4) at 20°C, and by heating the polynucleotide mixture in the same buffer for 10 min at 100°C with subsequent slow cooling. Success of the first method, not encountered in other papers, is probably due to careful purification of the polynucleotides. The double-strand complex stimulated maximum interferon formation in white mice 2-4 hours after intravenous injection. Interferon disappeared after 10-12 hours.

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USSR

(3)

AKSENOV, O. A., et al., Voprosy Virusologii, No 3, May/Jun 1973, pp 345-350

(Poly-G)·(poly-C) produced less interferon than did (poly-I)·(poly-C) (160-320 vs. 640-1,280 units/ml). The complex protected mice from lethal doses of A0/PR8 influenza virus, though (poly-I)·(poly-C) was somewhat more effective. (Poly-G)·(poly-C) was most effective when administered within 1 day of infection, while (poly-I)·(poly-C) was most effective when administered 2-3 days prior to the virus. The protective effect was higher for complex produced at 20°C than for that produced at 100°C. (Poly-G)·(poly-C) was nontoxic to white mice even at maximum dose (50 mg/kg), while (poly-I)·(poly-C) was 50 percent lethal at 10-15 mg/kg. Though (poly-G)·(poly-C) was found to be generally less effective than (poly-I)·(poly-C), its lower toxicity makes it a preferable antiviral agent.

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USSR

(2)

UDC 615.281.8:547.963.32

TIMKOVSKIY, A. L., AKSENOV, O. A., BRESLER, S. Ye., KOGAN, E. M., SMORODINTSEV, Al. A., and TIKHOMIROVA-SIDOROVA, N. S., Institute of Nuclear Physics, Academy of Sciences USSR, Institute of High Molecular Weight Compounds, Academy of Sciences USSR, and All-Union Scientific Research Influenza Institute, Ministry of Public Health USSR, Leningrad

"Molecular Weight Characteristics of the Polyriboguanilic-Polyribocytidylic Acid Complex and Their Relation to Antiviral and Interferonogenic Activity"

Moscow, Voprosy Virusologii, No 3, May/Jun 1973, pp 350-355

Abstract: Molecular weight characteristics and immunological activity of (poly-G)·(poly-C) were studied in comparison to those of (poly-I)·(poly-C) to determine the reasons for variations in the compound's immunological activity. It was found through gel chromatography that the molecular weight of the complex depended directly on the quantity of oligonucleotide impurities within either of the precursors, poly-G acid or poly-C acid. While impure precursors produce a complex with molecular weight 300,000-500,000 daltons, purification of both results in molecular weight close to that of (poly-I)·(poly-C) (over $1 \cdot 10^6$ daltons). Antiviral activity of the purified complex in white mice was practically identical to that of

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TIMKOVSKIY, A. L., et al., Voprosy Virusologii, No 3, May/Jun 1973, pp 350-355

(poly-I)·(poly-C). Activity also depended directly on precursor molecular weight, disappearing at 30,000-40,000 daltons. It is suggested that molecular weight is more important than nucleotide composition to antiviral and interferonogenic activity. Thus although the mechanism of action of both complexes remains to be clarified, apparently it is identical for both and depends directly on complex molecular weight and precursor purity.

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USSR

UDC 576.858.5.07

VAVILOVA, YU. G., GOREV, N. YE., and SMORODINTSEV, A. A., All-Union Scientific Research Institute of Influenza, Leningrad

"The Use of a Two-Phase Water-Polymer System for Concentrating Some Respiratory Viruses in Human Nasopharyngeal Swabs"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 623-625

Abstract: The reagents used were a 30% aqueous solution of polyethylene glycol (M.W. 6000) and a 6% aqueous solution of dextran (M. W. 20,000). Ten-ml samples containing a known quantity of virus in a phosphate buffer of pH 7-7.5 were mixed with 8 ml of the first reagent and 2 ml of the second. The mixtures were repeatedly shaken for 1 hr and then centrifuged for 10-15 min at 1000-1500 rpm. The virus was recovered almost 100% from the bottom stratum of dextran. A 10-100-fold concentration was obtained on all virus strains used. A similar treatment of human nasopharyngeal swabs taken 3-4 days after administration of live anti-influenza vaccine increased the frequency of virus isolation of 75.4% for A2 Hong Kong-68, 61.5% for B-USSR, and 44.4% for B-Dushanbe; the corresponding control figures were 52.5%, 38.4% and 25%. The two-phase water-polymer system is recommended for routine laboratory procedures of isolating influenza virus, parainfluenza virus, and adenovirus from the respiratory pathways of patients.

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UDC 616.988.75+616.2-036.11-022.6]-097.3

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SHADRIN, A. S., YAKUBENKO, A. A., MALYSHEVA, A. M., NAYKHIN, A. N., GROMOVA, M. I., RUMEL', N. B., and SMORODINTSEV, A. A., All-Union Scientific Research Institute of Influenza, Leningrad

"The Effect of Serum Antiviral Inhibitors on Resistance to Influenza and Acute Respiratory Diseases"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 582-586

Abstract: A study conducted on about 1000 men, women, and children living in Leningrad and Murmansk and on 129 volunteers revealed that the presence of beta-inhibitors in the blood significantly reduces the proportion of clinically severe forms of influenza and parainfluenza (a fall by a factor of 2.5), decreases the frequency of severe forms of experimental influenza (down by a factor of 2), and slows the development of immune response to vaccination with highly attenuated influenza strains. Beta-inhibitors do not exert an anti-infectious effect, that is, they do not prevent contraction of the diseases. Their protective value stems from their antitoxic effect, that is, reduction of the severity of influenza and parainfluenza without hindering the body's specific reaction to the infection.

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USSR

UDC 576.858.5.095.383

3

SELIVANOV, A. A., KOVALEVA, T. P., AKSENOV, O. A., YURLOVA, T. I., LYSOV, V. V., KRYLOV, V. A., and SMORODINTSEV, A. A., All-Union Scientific Research Institute of Influenza, Ministry of Health USSR, Leningrad

"Anti-Interference Effect of Adenoviruses"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 574-577

Abstract: Crude adenoviruses, serotype 1, 4, and 7 adenoviruses heated to 56°C for 30 min, and purified pentone antigen of serotype 4 suppress induction of interferon by influenza A2 Hong Kong Virus and inhibit interference between influenza A2 virus and vesicular stomatitis virus in chick embryo fibroblasts. Adenoviruses treated with trypsin, fibrantigen, and hexone-antigen no longer have this capacity. There is a good direct correlation between the cytotoxic, anti-interference, and anti-interferon-inducing capacities of the above-mentioned strains of adenoviruses. None of these strains stimulates reproduction of vesicular stomatitis virus. It is postulated that anti-interference is due not only to inhibition of interferon production but also to reduction of the activity of previously produced interferon.

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USSR

UDC 576.858.75

VOYTSEKHOVSKIY, B. L., POLYAK, R. Ya., and SMORODINTSEV, A. A., Member, Academy of Medical Sciences USSR, All-Union Scientific Research Influenza Institute, Leningrad

"Determination of the Toxic Activity of Influenza Virus with Respect to Inhibition of Oxygen Consumption in the Virus-Cell System"

Moscow, Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,478-1,480

Abstract: The effect of influenza virus strains on the respiratory function of human and animal cells sensitive and resistant to infection with the virus was studied. Influenza virus A_2-Hong Kong/68 that had been partly purified by centrifuging and with freon-113 stimulated the respiration of infected susceptible cells (chick embryo and human embryo cultures) and inhibited the respiration of resistant cells (human leukocytes and chick embryo fibroblasts. The toxic effect of the virus on respiration was suppressed by type-specific antibodies. Microcalorimetric determination of the heats of reaction of various substrates with a virus-infected and non-infected homogenate of chick embryo fibroblasts showed that all principal stages of glycolysis and oxidation were altered by infection with the virus.
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VOYTSEKHOVSKIY, B. L., et al., Doklady Akademii Nauk SSSR, Vol 201, No 6, 1971, pp 1,478-1,480

The decrease in the consumption of O_2 was accompanied by reduced activity of glycolytic and oxidative enzymes, increased activity of ATP-ase, and accelerated utilization of NAD-H_2. There was a direct relationship between the toxic activity of a virus strain, as indicated by inhibition of cell respiration, and the pathogenicity of the strain to the cell donor. The strain A_2-Hong Kong/3 with a highly virulent effect on humans was much more toxic to human leukocytes than the vaccinal strain A_2-Hong Kong/21, which is adapted to chick embryo fibroblasts. On the other hand, strain A_2-Hong Kong/21 was more toxic to chick embryo fibroblasts than to human leukocytes. The results obtained show that the toxicity of an influenza virus strain, and consequently its virulence, can be conveniently determined on the basis of its capacity to inhibit the respiration of resistant cells.

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UDC 616.988.75-036.22-078"1969"

SMORODINTSEV, A. A., LUZYANINA, T. Ya., IVANOVA, N. A., and GRINBAUM, Ye. B., All Union Scientific Research Institute of Influenza, Ministry of Health USSR

"Characteristics of Influenza A2 Virus Strains Isolated During the 1969 Epidemic in Leningrad"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 70, pp 601-605

Abstract: The influenza epidemic in the winter of 1969 in Leningrad resulted from the spread of a new antigenic variant of the Hong Kong A2 virus. The distinctive feature of the Hong Kong A2 strains is their capacity to multiply intensively in the allantoic and amniotic cavities of chick embryos. On the basis of this characteristic, an unusually high isolation rate of epidemic strains from patients was obtained. The A2-69 viruses differ in this respect from the A2 viruses circulating previously, the isolation of which has presented increasing difficulties since 1962. Another typical feature of the newly isolated strains is their pronounced antigenic difference from the earlier A2-1 and A2-2 variants. This sharp deviation in the antigenic structure of Hong Kong A2 influenza virus was confirmed by the absence of antibodies for the new variant in the Leningrad population under 60 years of age.
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SMORODINTSEV, A. A., et al, Voprosy Virusologii, No 5, Sep/Oct 70, pp 601-605

This factor led to the rapid involvement of both children and adults in the epidemic process.

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USSR

UDC 576.8.093.2

TSYBUL'SKAYA, N. V., SHVARTSMAN, Ya. S., KORNEYEVA, E. P., and SMORODINTSEV, A. A., Academician, Academy of Medical Sciences, USSR, All Union Scientific Research Institute of Influenza, Leningrad

"Antibody Synthesis by Lymphoid Cells After Immunization With Two Viral Antigens"

Moscow, Doklady Akademii Nauk SSSR, Vol 195, No 3, 1970, pp 719-721

Abstract: The adsorption method was used to study antibody formation by spleen cells in mice immunized with influenza A2 and B viruses. The number of cells active in antibody formation did not increase until 48 hours after immunization, reaching a peak on the 5th day and quickly decreasing thereafter. Even at the height of the response, no more than 0.76% of the investigated cell population participated. Of the 24,518 cells from 15 immunized animals, only 293 cells produced antibodies, 160 to the A2 virus and 133 to the B virus. No cell elaborated the two types of antibodies at the same time. The number of cells that produced antibodies to each of the viruses was unrelated to whether the animals were immunized with monovalent or bivalent vaccine. It is thus evident that lymphoid cells are

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TSYBUL'SKAYA, N. V., et al, Doklady Akademii Nauk SSSR, Vol 195, No 3, 1970, pp 719-721

functionally differentiated with respect to their reactions with different viral antigens.

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USSR

SMORODINTSEV, A. A., All Union Scientific Research Institute of Influenza, Ministry of Health USSR, Leningrad

"Phagocytic Factors in Antiviral Immunity," pp 34-44

Abstract: The difference between the protective factors of antiviral immunity based on phagocytosis and the protective factors of antibacterial immunity based on antibody synthesis is discussed. The effectiveness of the phagocytic system is questioned, since extensive laboratory investigations using the fluorescent antibody method established the presence of smallpox, influenza, ectromelia, and poliomyelitis viruses in the phagocytes. Further systematic investigations of the role of phagocytic processes in antiviral immunity disclosed a number of factors pointing to the pronounced inertness of phagocytosis in manifestations of nonspecific resistance to viral infections. The role of pinocytosis in antiviral immunity is also discussed. Nevertheless, the importance of phagocytosis in combating viral infections cannot be overestimated, and further investigations of the phagocytic system with emphasis on the consequences of the interaction of the lymph-macrophage system with virus-infected cells, and the probable protective character of the
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Publications

USSR

SMORODINTSEV, A. A., Academician of the Academy of Medical Sciences, BERMANA, V. M., Professor (Deceased) and SOFRONOV, B. N., Doctor of Medical Sciences (Editors)

Sovremennyye Problemy Immunologii i Immunopatologii (Modern Problems of Immunology and Immunopathology), Leningrad, "Meditsina," 1970, 288 pp

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USSR

SMORODINTSEV, A. A., "Phagocytic Factors in Antiviral Immunity," pp 34-44

isolation of the virus and its toxic products which takes place under such conditions is urged. Study of the organism's production of the highly useful interferon and the antibodies which accompany the above processes is also urged.

USSR S UDC 576.858.095.383

RUDENKO, V. I., SMORODINTSEV, AL., A., ARSENOV, O.A. and LUASINA, L. M., All-Union Scientific Influenza Research Institute, Ministry of Health USSR

"The Nature of Interferon-Producing Cells"

Moscow, Voprosy Virusologii, No 1, 1970, pp 52-56

Abstract: The capacity of bovine macrophages and PBC to produce interferon in vitro after inoculation with Newcastle disease virus was studied. Macrophages produced much more interferon than did cultures consisting mostly of polymorpho nuclear leukocytes. The amount of interferon produced was directly related to the number of macrophages in the culture, an indication that these elements play an active part in the production of the protein. Interferon was produced in the polymorpho nuclear leukocyte culture because of the admixture of RES cells. Interferon production started within 1-3 hours after introduction of Newcastle disease virus, peaking after 6 hours, and ceasing completely after 24-48 hours. The rate of interferon production varied with the number of cells cultured, incubation temperature, dose of theinducer virus, and age of the animals from which the lymphocytes and monocytes were obtained.
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USSR

UDC 576.858

SMORODINTSEV, A. A., and GOLUBEV, D. B., All Union Scientific Research Influenza Institute, Ministry of Health USSR

"The Problem of the Biological Nature of A Virus"

Moscow, Uspekhi Sovremennoy Biologii, Vol 69, No 2, Mar/Apr 70, pp 208-219

Abstract: This is a review article with 31 references on the molecular organization of viruses. Brief mention of the recent work of V. M. Zhdanov, Gaydamovich, A. F. Bykovskiy, N. A. Zeytlenok, Drtsenik, P. N. Kosyakov, M. B. Korolev, D. B. Golubev, and A. A. Smorodintsen are included.

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1/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--ON THE NATURE OF INTERFERON PRODUCING CELLS -U-

AUTHOR--RUDENKO, V.I., SMORODINTSEV, A.A., AKSENOV, O.A., LYABINA, L.M.

COUNTRY OF INFO--USSR

SOURCE--VOPROSY VIRUSOLOGII, 1970, NR 1, PP 52-56

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CELL CULTURE, INTERFERON, LEUCOCYTE, INOCULATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0054 STEP NO--UR/0402/70/000/001/0052/0056

CIRC ACCESSION NO--AP0103734
UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103734

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BOVINE LYMPHOCYTIC AND MONOCYTIC CELL CULTURES PRODUCED AFTER INOCULATION WITH NDV MUCH MORE INTERFERON THAN "PURE" CULTURES OF POLYNUCLEAR LEUCOCYTES. THE YIELD OF INTERFERON DEPENDED DIRECTLY UPON THE AMOUNT OF LYMPHOCYTES AND MONOCYTES IN THE CULTURE, INDICATING THE PREDOMINANT RSLE OF THESE CELLS IN INTERFERON PRODUCTION. INTERFERON PRODUCTION DETECTED IN THE "PURE" POLYNUCLEAR LEUCOCYTE CULTURES WAS DUE TO 10PERCENT CONTAMINATION OF THESE CULTURES WITH CELLS OF RETICULO ENDOTHELIAL SYSTEM LYMPHOCYTES AND MONOCYTES. THE MAIN INTERFERON PRODUCTION WAS SHOWN TO BE COMPLETED WITHIN THE FIRST 24 HOURS AFTER INOCULATION. THE RATE OF INTERFERON PRODUCTION DEPENDED ON THE NUMBER OF CELLS IN CULTURE, INCUBATION TEMPERATURE, INDUCER VIRUS DOSE, PH OF THE MEDIUM, AND THE AGE OF HOST ANIMAL.

UNCLASSIFIED

USSR

KOLYBASOV, V. M., SMORODINSKAYA, N. Ya., Institute of Theoretical and Experimental Physics, State Committee on the Use of Nuclear Power

"Polarization Effects in (p, 2p) Reactions"

Moscow, Yadernaya Fizika, Vol 15, No 3, Mar 72, pp 483-490

Abstract: Expressions are found for asymmetry and polarization of the recoil nuclei in (p, 2p) reactions. The amplitude of the reaction is represented by the sum of a polar term and a certain additional term which approximates the contribution from more complex figures. Separate consideration is given to two special cases: a) the asymmetric coplanar case; b) the case where only the magnitude and direction of the momentum of the recoil nucleus are recorded. A numerical estimate is given for the expected polarization and asymmetry of a number of specific nuclei using information on the real and imaginary parts of the additional term published previously. A discussion of the difficulties involved in measuring the polarization of the final nucleus shows that it would be more practical to measure the escape asymmetry of secondary particles in an experiment on a polarized target. The authors thank I. S. Shapiro for interest in the work and discussion of the results. One figure, bibliography of six titles.
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USSR

LUKACS, I.; SMORODINSKIY, Ya. A. (Physics Institute of the Slovakian Academy of Sciences, Joint Institute for Nuclear Research)

"Separation of Variables in a Spherical-Conical Coordinate System and the Schrödinger Equation for One Case of Noncentral Forces"

Moscow, Teoreticheskaya i Matematicheskaya Fizika; February, 1973; pp 170-9

ABSTRACT: The authors consider the separation of variables in a spherical-conical system of coordinates which is related to the existence of an elliptical system of coordinates on a three-dimensional sphere. Of the class of allowable potentials, that which is of interest is the potential of the form $qr^{-4}[3(ar)(\beta r) - (a\beta)r^2]$, where a and β are two arbitrary unit vectors. The angular part of this potential has the form of noncentral interaction similar to the angular part of the interaction of two magnetic dipoles. After the angular part is related to the principal axes, the solution of the Schrödinger equation with such a potential reduces to the Lamé wave equation. Solutions in the first order of perturbation theory are given, and splitting of the energy levels of a radially symmetrical field in the presence of such a non-central potential is considered. In particular, splitting of the energy levels

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LUKACS, I.; SMORODINSKIY, Ya. A., Teoreticheskaya i Matematicheskaya Fizika; Feb 1973, pp 170-9

in the presence of such a potential in the case of a Coulomb potential and in the case of a potential proportional to the square of the radius is calculated. The article includes 24 equations and two figures.

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SMOROTIN, A. I. RYASHKIN, N. Ya.

"Solution of a System of Linear Algebraic Equations by the Method of Optimal Exclusion"

Algoritmy i Algoritmich. Yazyki [Algorithms and Algorithmic Languages -- Collection of Works], No 5, Moscow Acad. Sci. USSR Computer Center, 1971, pp 15-17, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V544 by the author's).

Translation: A description is presented of an ALGOL-60 procedure, a realization of an algorithm for solution of a system of linear algebraic equations by the method of optimal exclusion. In contrast to other solution systems, this method does not require simultaneous storage of the entire matrix of coefficients of the system in main memory. The algorithm is designed for solution of systems of linear algebraic equations of high order.

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USSR

UDC 577.1:615.7/9

SEREBRYANYY, A. M., SMOTRYAYEVA, M. A., KRUGLYAKOVA, K. Ye., and KOSTYANOVSKIY, R. G.

"Study of the Molecular Mechanism of the Mutagenic Effect of N-Nitro-N-Methylurea"

V sb. 7-y Mezhdunar. Simpozium po khimii prirodn. soyedin. 1970. Tezisy dokl. (7th International Symposium on the Chemistry of Natural Products. Abstracts of Reports -- Collection of Works), Riga, "Zinatne", 1970, pp 230-231 (from RZh-30F. Biologicheskaya Khimiya, No 1, Jan 71, Abstract No 1F2110)

Translation: Under the action of N-nitroso-N-methylurea (I) on DNA of thymus and spleen in rats, carbamoylation of DNA and fragmentation of the polynucleotide chain takes place together with methylation. Among the products of the reaction of I with cytidine is N-carbamoylcytidine; its acid hydrolysis forms uridine. According to the conclusion of the authors, carbamoylation of DNA in vivo may lead to the occurrence of mutations. A. Ignatlyev

1/3 025 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--A COMPARATIVE CYTOLOGICAL STUDY OF THE NASAL MUCOUS MEMBRANE SECRETA AND BLOOD IN DIFFERENT FORMS OF VASOMOTOR RHINITIS -U-

AUTHOR-(02)-ZAGORYANSKAYA, M.YE., SMOTROVA, I.A.

COUNTRY OF INFO--USSR

SOURCE--VESTNIK OTORINOLARINGOLOGII, 1970, NR 1, PP 32-36

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--RESPIRATORY SYSTEM DISEASE, LEUKOCYTE, GLYCOGEN, BLOOD CHEMISTRY, OTOLARYNGOLOGY, CELL PHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0802 STEP NO--UR/0607/70/000/001/0032/0036

CIRC ACCESSION NO--AP0049024

UNCLASSIFIED

2/3 025 UNCLASSIFIED

CIRC ACCESSION NO--AP0049024 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS UNDERTOOK STUDIES OF THE GLYCOGEN CONTENT IN LEUKOCYTES OF NASAL MUCOUS MEMBRANE SECRETA, PERIPHERAL BLOOD AND BLOOD FROM THE INFERIOR NASAL CONCHAE IN 80 PATIENTS WITH VASOMOTOR RHINITIS. BESIDES, GLYCOGEN WAS DETERMINED IN THE EPITHELIUM OF NASAL MUCOUS MEMBRANE SECRETA. OUT OF 80 PATIENTS IN 48 THE AUTHORS DIAGNOSED ALLERGIC AND IN 32, NEUROVEGETATIVE FORM OF RHINITIS. IT WAS FOUND THAT IN THE EPITHELIUM AND LEUKOCYTES OF NASAL MUCOUS MEMBRANE SECRETA IN BOTH FORMS OF RHINITIS A LOW GLYCOGEN CONTENT PREVAILED. DETERMINATION OF GLYCOGEN IN LEUKOCYTES OF THE PERIPHERAL BLOOD AND BLOOD OF THE AFFECTED ORGAN REVEALED THAT ITS LEVEL SHARPLY RISES IN BOTH FORMS OF RHINITIS OF ALLERGIC AND OTHER GENESIS. THUS, OUT OF 48 PATIENTS WITH AN ALLERGIC FORM OF RHINITIS IN 46 CASES THERE WAS NOTED AND INTENSIVE AND IN 2, AN AVERAGE CONTENT OF GLYCOGEN; OUT OF 32 PATIENTS WITH A NEUROVEGETATIVE FORM, IN 22 AN INTENSIVE AND IN 10, AN AVERAGE GLYCOGEN CONTENT. A SIMILAR PICTURE IS SEEN IN BLOOD LEUKOCYTES FROM THE INFERIOR NASAL CONCHAE. ANALOGOUS INVESTIGATIONS WERE CARRIED OUT IN TWO CONTROL GROUPS: 1) IN 10 APPARENTLY HEALTHY PERSONS AND 2) IN 10 PATIENTS WITH CHRONIC SUPPURATIVE SINUSITIS AND CONCOMITANT CHRONIC CATARRHAL RHINITIS. IN PATIENTS OF BOTH GROUPS THERE WERE NO INDICATIONS OF ALLERGIC DISEASES. ONLY IN ONE PATIENT OF THE FIRST GROUP AN INTENSIVE GLYCOGEN CONTENT WAS NOTED. IN ALL PATIENTS OF THE SECOND GROUP AN AUGMENTED BLOOD GLYCOGEN CONTENT WAS SEEN.

UNCLASSIFIED

3/3 025 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0049024

ABSTRACT/EXTRACT--THE AUTHORS ARRIVED AT THE CONCLUSION THAT AN INCREASED LEVEL OF GLYCOGEN IN BLOOD LEUKOCYTES MAY BE OBSERVED IN ANY FORM OF INFLAMMATION, INCLUDING ALLERGIC. HOWEVER, THE AUTHORS AT PRESENT REFRAIN FROM SUGGESTING THIS TEST AS A DIFFERENTIAL DIAGNOSIS SIGN OF ALLERGIC INFLAMMATION.

UNCLASSIFIED

USSR

SVECHNIKOV, S. V., SMOVZH, A. K., Institute of Semiconductors, Academy of Sciences of the UkrSSR

UDC: 621.382:012

"Functional Converters Based on Photoresistors"

Kiev, Poluprovodnikovaya Tekhnika i Mikroelektronika, Resp. Mezhved. Sb., No 7, 1972, pp 31-38

Abstract: A theoretical investigation is made into the static mode of operation of functional converters based on photoresistors. The following designs of functional photoresistors are considered: 1) a photoresistor of transverse design with variable spacing between contacts; 2) a photoresistor with variable width of the light probe; 3) a photoresistor of longitudinal design with variable area of the illuminated surface. Profiles of the functional elements of the photoresistors are plotted in accordance with predetermined conversion functions. The limitations imposed on the conversion functions are determined in accordance with the chosen photoresistor designs. Errors of functional conversion are analyzed on the basis of an examination of nonhomogeneities of the photoresistive layers, and ways to reduce these errors are indicated. Experiments with functional photo-

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USSR

SVECHNIKOV, S. V., SMOVZH, A. K., Poluprovodn. Tekh. i Mikroelektron. Resp. Mezhved. Sb., No 7, 1972, pp 31-38

resistors showed that these devices give appreciably higher currents in the load than do functional photopotentiometers. They also can be used to reproduce functions with a wider range of slopes than photopotentiometers. An experimental verification of the proposed theoretical analysis showed that the computational procedure can be used in designing functional converters.

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USSR

UDC 621.383.4.004.14

ZYUGANOV, A.N., SVECHNIKOV, S.V., SHCVZH, A.K.

"On The Problem Of The Application Of Photopotentiometers As Function Generators"

Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1067-1072

Abstract: A computation of the profile of the resistor of a function photopotentiometer is presented, based on the solution of a two-dimension Laplace equation with the condition of the existence of a leakage current lengthwise of the entire device. A criterion is obtained for the applicability of a one-dimensional approximation during computation of a function photopotentiometer. The conditions imposed on the transfer function are determined. The theoretical positions of the paper are confirmed by experimental studies conducted with models of function photopotentiometers made of electrical conducting paper. A cosine function was chosen as a control transfer function. Measurements were made with the aid of the EMDA-60 integrator of the Institute Of Mathematics, Academy Of Sciences, Ukrainian SSR. A comparison is shown of the dependence of the error of a function generator on the magnitude of the scaling constant for one-dimensional and two-dimensional approximations. The potential distribution at the resistor--photolayer boundary is shown for a function photopotentiometer operating in a regime of leakage currents. The elimination of the errors of a function generator connected with the presence of leakage currents across the photolayer is the principal result of the paper. This offers the prospect of

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USSR

ZYUGANOV, A.N., et al, Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1067-1072

using semiconductor materials as the photoconducting layers of function photopotentiometers which have smaller magnitudes of the ratio of light and dark conductivity as compared with CdS and CdSe, and are also characterised by a smaller inertia of the photoconductivity, which makes it possible to expand substantially the frequency range of function generators based on photopotentiometers. 3 fig. 5 ref. Received by editors, 8 April 1971.

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USSR

ARKAD'YEV, S. A., SMOYLOVSKAYA, N. G.

UDC 8.74

"Problem of Time-Sharing Programs"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Engineering in Machine Building. Scientific and Technical Collection), 1970, dec, pp 115-119 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V606)

Translation: One of the methods of dividing a large program into a series of independent programs is described.

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UDC 621.382.2

USSR

SMERCHEK, V.I.

"Concerning An Approximation Of The Volt-Farad Dependence Of A Parametric Diode"

Materialy nauch.-tekhn.konf. Leningr. elektrotekhn. in-ta svyazi (Materials Of Scientific-Technical Conference, Leningrad Electrical Engineering Institute Of Communications), Issue 4, Leningrad, 1971, pp 69-71 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3B133)

Translation: A linear-exponential approximation of the barrier capacitance of a parametric diode is considered, and a method of determining the approximation constant is presented. An experimental and approximate dependence are constructed and the approximation error is calculated for the type 1A404 diode.

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UDC 621.382.23.011.222

USSR

SMRCHEK, V.L.

"Concerning An Approximation Of The Volt-Farad Dependence Of A Tunnel Diode"

Materialy nauch.-tekhn.konf. Leningr. elektrotekhn. in-ta svyazi (Materials Of Scientific-Technical Conference, Leningrad Electrical Engineering Institute Of Communications), Issue 4, Leningrad, 1971, pp 71-76 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3B134)

Translation: The volt-farad dependence of a tunnel diode is considered. A linear-broken and linear-exponential approximation of this dependence is proposed, and a method of determining the constants of the approximating functions is presented. Graphs of experimental and approximate volt-farad dependences and a calculation of the approximation error are presented for a germanium tunnel diode.

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SMULEVICH, A. B.

SO: JPRS 53378
16 June 71

UDC: 616.895.8-091-02:615.214

SOME PROBLEMS DEALING WITH PATHOMORPHOSIS OF SCHIZOPHRENIA AS RELATED TO ADMINISTRATION OF PSYCHOTROPIC DRUGS

[Article by A.B. Smulevich, F.Ye. Vartanyan, G.I. Zavilovskaya, Moscow; Institute of Psychiatry, USSR Academy of Medical Sciences, Moscow; Ventnik Akademii Meditsinskikh Nauk SSSR, Russian, No 5, May 1971, pp 79-83]

Problems dealing with therapeutically determined alteration (pathomorphosis) of clinical manifestations and patterns of development of psychoses considered within the framework of schizophrenia are the subject of numerous investigations pertaining mainly to provocation symptoms, intermediate syndromes, etc. One of the most popular pathogenetic conceptions as well as to the concept of target symptoms, provocation symptoms, interpreting the heterogeneity of reactions to drugs is the effort to relate the differences in influence of psychotropic agents to the degree of activity of the pathological process (Perrilowitch; Janzarik; Heinrich, and others). According to this view, pharmacogenic pathomorphosis can occur only during activation of the moving forces of the disease, and is almost never observed with a chronic malignant course or at the stabilization stage. In the latter cases, according to this view (Janzarik; Hubert; Kyanz) psychotropic drugs have only a symptomatic action, i.e. their influence consists only of reducing manifestations of the disease.

Studies pursued at the Institute of Psychiatry, USSR AMS, are indicative of the existence of some bias in this point of view. And we take the liberty to voice the following positions, but strictly in the nature of hypotheses.

Onset of therapeutic pathomorphosis is possible during rational administration of pharmacological agents not only during a period of exacerbation but also during other phases of the pathological process. However, the nature and severity of brain function damage; 2) degree of activity of therapy-related changes in the clinical findings are related to 1) severity of the process.

Or, on the contrary, stabilization of the process.

To substantiate these positions we had to compare the results of prolonged administration of psychotropic agents to at least three groups of

UDC 546.284-31:66.093.8

USSR

ARSLAMBEKOV, V. A., GORBUNOVA, K. M., KARATEYEVA, V. I., and SMUSHCHENKO, V. YA., Institute of Physical Chemistry, Academy of Sciences USSR

"Properties of SiO_2 Films, Prepared by the Hydrolysis of SiF_4"

Moscow, Neorganicheskiye Materialy, Vol 9, No 12, 1973, pp 2120-2123

Abstract: The precipitation of the SiO_2 films was carried out at temperatures of 550 to 730°C and concentrations of H_2SiF_6 of 13, 21, and 45%. A graph shows the deposition rate as a function of the substrate temperature and the vaporized acid, being a maximum for the highest values of both. Measurement of the breakdown voltage at 15-20 points showed that a film 2.4 μ thick had a breakdown voltage of 7×10^6 v.cm, whereas films 1.7 and 0.83 μ had breakdown voltages of 8×10^6 and 7.5×10^6 v/cm, respectively. Treatment of the surface with organic solvents changed the breakdown voltage somewhat. Curves for the distribution of contact differences in the surface potential φ are also shown. Characteristic differences are observed which may be a function of the heterogeneous distribution of charge in the layers which is in turn a function of the preparation methods.

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UDC 613.155:656.132:621.43.013.1

USSR

BUL'BULYAN, M. A., and SMULEVICH, V. B., Institute of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow

"Contamination of the Air in the Drivers' Cabs of Buses and Trolleys"

Moscow, Gigiyena i Sanitariya, No 1, 1973, pp 87-89

Abstract: In work in which the Central Scientific Research Automobile and Automobile Motor Institute, Ministry of the Automobile Industry USSR, and the Laboratory of the Prophylaxis of Cancerogenic Effects, Institute of Experimental and Clinical Oncology, cooperated, a study was carried out of the contamination of the air in drivers' cabs of buses ZIL-158 "V" and LIAZ-677 and trolley buses ZIU-5 that are used in the municipal transportation system of Moscow. The mean concentrations of contaminants (in mg/m3) in the air of the drivers' cabs were in the warm season CO 42.3, total hydrocarbons 177.2, N oxides 1.5, gasoline 166.8 in buses and CO 22.1, total hydrocarbons 128.0, N oxides 2.4, gasoline 89.9 in trolley buses; in the cold season CO 56.5, total hydrocarbons 216.0, N oxides 4.2, gasoline 114.4 in buses and CO 11.0, total hydrocarbons 64.3, N oxides 1.97, gasoline 52.5 in trolley buses. The mean concentrations of benzopyrene (in gamma/100 m3) in the cabs of buses were 6.3-7.5 in the cold season and 1.8-3 in the warm season. The concentrations of benzopyrene in the

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USSR

EUL'BULYAN, M. A. and SMULEVICH, V. B., Gigiyena i Sanitariya, No 1, 1973, pp 87-89

cabs of trolley buses were lower. In the warm season the contamination of air in the cabs of buses was lower than in the cold season, because the windows of the cabs were open in warm weather. The reverse was true for contamination of the air in the cabs of trolley buses, because the contaminants were introduced from the outside and more outside air came into the cabs when the windows were open.

UDC 621.382.3:546.289

USSR

KUZNETSOV, YU.A., KAMENETSKIY, YU.A., SMUL'SKIY, A.S.

"Type GT-338 Germanium Avalanche Transistor"

Elektron. prom-st'. Nauch.-tekhn. sb. (Electronic Industry. Scientific-Technical Collection), 1971, No 4, pp 40-41 (from RZh:Elektronika i yeye primeneniye, No 5, May 1972, Abstract No 5B190)

Translation: The principles of operation of a Type GT-338 transistor are based on the effect of carrier multiplication in the region of the space charge of the collector. Use of the GT-338 in the circuits of generators of narrow pulses and of pulses with a steep front of the nano- and submanosecond range makes it possible to simplify circuits substantially and to improve their technical characteristics. Summary.

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USSR

SMUL'SON, M. L.

"Influence of Semantic Connections in Material in a Verbal Assignment on the Process of its Performance"

Lingvist. Probl. Avtomatiz. Inform. Poiska [Linguistic Problems of the Automation of Information Retrieval -- Collection of Works], Kiev, 1972, pp 71-80 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V827).

Translation: This article describes an experiment on determination of the influence of semantic and grammatical factors in the solution of problems constructed using verbal material. During the experiment, the hypothesis that man cannot fully abstract himself from the significance of words and the "grammar of combination of senses" is fully confirmed, and the purpose of the problem is replaced, with the development of an ineffective, inadequate strategy for its solution. The influence of semantic connections is successfully overcome only by test subjects with the capability for the solution of new creative problems.

Ye. Burgina

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UDC 678.742.3-137.462.2:613.632

USSR

SMUROVA, YE. V., ZURLOVA, O. M., SOSIN, S. L., ANTIPOVA, E. A., NOVIKOVA, S. P., KARPINSKAYA, V. M.

"Interaction of Modified Polypropylene with Blood"

Moscow, Plasticheskiye Massy, No 4, 1972, pp 60-61

Abstract: The results of studying polymers with antithrombogenic properties are described. Data are presented on obtaining a sulfonated inoculated copolymer of polypropylene and polystyrene, and a study is made of the conditions permitting the polymer to be obtained which prevents the coagulation of blood on contact. With an increase in the active group content, the given copolymers cause significant hemolysis of the blood corpuscles. Iron ions must introduced into the copolymer to eliminate this phenomenon. The presence of iron ions in the sulfonated inoculated copolymer polypropylene+ polystyrene+polyvinylferrocene promotes a noticeable reduction in the hemolysis of the red blood corpuscles on contact of the blood with copolymers without changing the antithrombogenic properties.

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UDC 547.753.757.07+546.79

USSR

DIMITREVSKAYA, L. I., SMUSHKEVICH, Yu. I., POZDNYAKOV, A. D., and SUVOROV, N.N., Moscow Chemico-Technological Institute imeni D. I. Mendeleev, Moscow

"Derivatives of Indole. LXXXII. Synthesis of Derivatives of Indole-^{15}N"

Riga, Khimiya Geterotsiklicheskikh Soyedinenii, No 4, Apr 73, pp 516-517

Abstract: 3-Indolylacetic-^{15}N acid (I), tryptamine-1-^{15}N (II), and N, N-dimethyltryptamine-1-^{15}N (III) were synthesized. Indole-^{15}N was prepared by the cyclization of phenylhydrazone-1-^{15}N on gamma-Al_2O_3 (cf. I. D. Pletnev et al, Khim. Geterotsik. Soyed., 1632, 1972) and I by reacting indole-^{15}N with chloroacetic acid at 245-500 in an autoclave in the presence of KOH. The reaction of indole-^{15}N with oxalic acid dichloride yielded 3-in-dolyloxalylchloride-^{15}N, which was converted to 3-indolyloxalylamide-1-^{15}N (IV) and the corresponding dimethylamide (V) by reacting it with NH_3 and Me_2NH, respectively. Reduction of IV and V with $LiAlH_4$ in tetrahydrofuran led to the formation of II and III, respectively. The content of ^{15}N was 10.9% in indole-^{15}N, 10.7% in I, 5.33% in II, and 5.46% in III.

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UDC 547.757.541.69

USSR

KAYUMOV, V., SMUSHKEVICH, Yu. I., and SUVOROV, N. N., Moscow Chemico-Technological Institute imeni D. I. Mendeleyev, Moscow

"Derivatives of Indole. LXXXIV. Hydroxamic Acids of the Indole Series"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 73, pp 756-758

Abstract: 3-Indolyl-aceto-, propio-, and butyrohydroxamic acids were obtained by reacting the ethyl esters of 3-indolyl-acetic, -propionic, and -butyric acid with hydroxylamine in the presence of KOH. On subjecting the hydroxamic acids to a Lossen rearrangement, symmetrical bis(3-indolyl-alkyl) ureas were obtained. Upon the Lossen rearrangement of 3-indolyl-propiohydroxamic, acid, N,O-bis/2-(3-indolyl)ethylcarbamoyl/-N-/3-(3-indolyl)propionyl/hydroxylamine was also isolated. The reaction of the hydroxamic acids with phenyl isocyanate led to O-(N-phenylcarbamoyl)-3-indolyl-alkylhydroxamic acids.

UDC 547.756.07

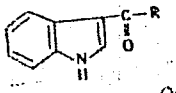
USSR

RUSINOVA, V. N., SMUSHKEVICH, YU. I., and SUVOROV, N. N., Moscow Chemical Technology Institute im. D. I. Mendeleyeva

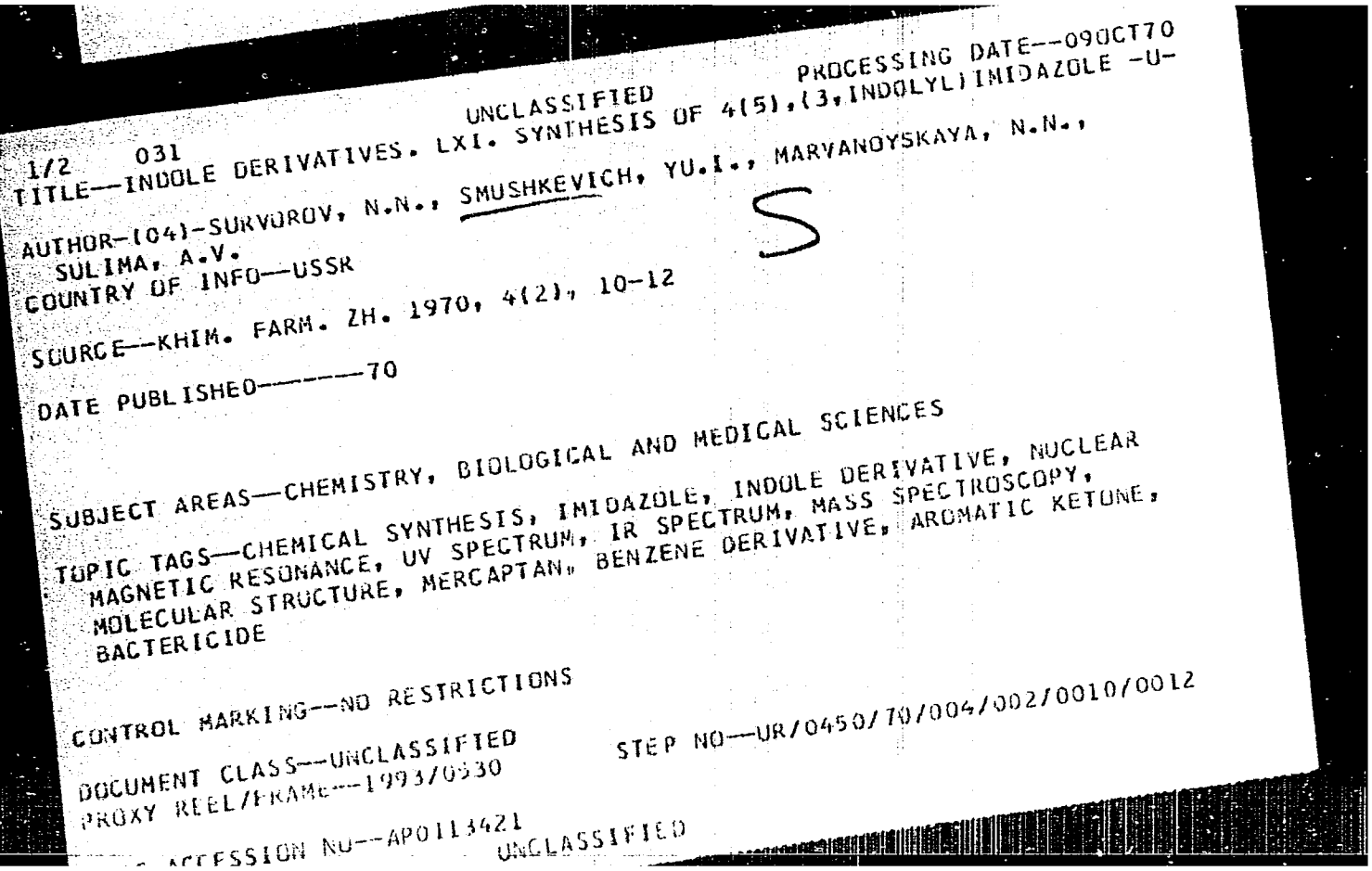
"Synthesis of 3-Acylindols"

Riga, Khimiya Geterotsiklicheskikh Soyedinenii, 5, May 1973, pp 716-717

A study was made of the acylation of the indolylmagnesiumbromides by acid chlorides. It was determined that using a 1- to 5-fold excess of the indolylmagnesiumbromide resulted in the formation of the 3-acylindols with a 60-80% yield and facilitated their preparation. Six acylindols having the following formula were prepared:



The R group were mostly aryl or alkyl groups. Only the monoacylation product was observed.



1/2 031 UNCLASSIFIED PROCESSING DATE--090CT70

TITLE--INDOLE DERIVATIVES. LXI. SYNTHESIS OF 4(5),(3,INDOLYL)IMIDAZOLE -U-

AUTHOR-(04)-SURVOROV, N.N., SMUSHKEVICH, YU.I., MARYANOYSKAYA, N.N., SULIMA, A.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. FARM. ZH. 1970, 4(2), 10-12

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

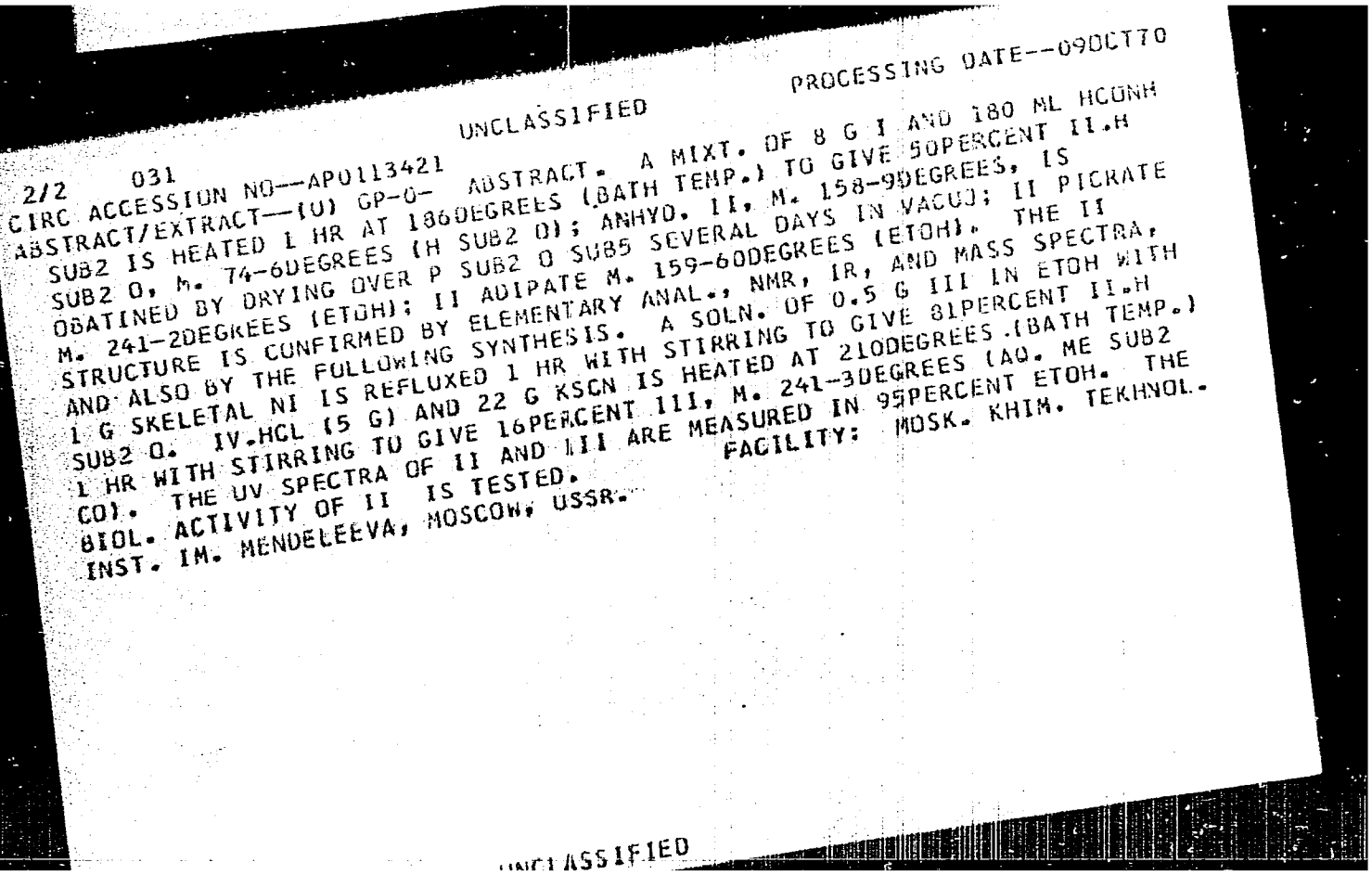
TOPIC TAGS--CHEMICAL SYNTHESIS, IMIDAZOLE, INDOLE DERIVATIVE, NUCLEAR MAGNETIC RESONANCE, UV SPECTRUM, IR SPECTRUM, MASS SPECTROSCOPY, MOLECULAR STRUCTURE, MERCAPTAN, BENZENE DERIVATIVE, AROMATIC KETONE, BACTERICIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED STEP NO--UR/0450/70/004/002/0010/0012

PROXY REEL/FRAME--1993/0530

ACCESSION NO--AP0113421 UNCLASSIFIED



UNCLASSIFIED PROCESSING DATE--09OCT70

2/2 031

CIRC ACCESSION NO--AP0113421

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF 8 G I AND 180 ML HCONH SUB2 IS HEATED 1 HR AT 186DEGREES (BATH TEMP.) TO GIVE 50PERCENT II.H SUB2 O, M. 74-6DEGREES (H SUB2 O); ANHYD. II, M. 158-9DEGREES, IS OBATINED BY DRYING OVER P SUB2 O SUB5 SEVERAL DAYS IN VACUO; II PICRATE M. 241-2DEGREES (ETOH); II ADIPATE M. 159-60DEGREES (ETOH). THE II STRUCTURE IS CONFIRMED BY ELEMENTARY ANAL., NMR, IR, AND MASS SPECTRA, AND ALSO BY THE FOLLOWING SYNTHESIS. A SOLN. OF 0.5 G III IN ETOH WITH 1 G SKELETAL NI IS REFLUXED 1 HR WITH STIRRING TO GIVE 81PERCENT II.H SUB2 O. IV.HCL (5 G) AND 22 G KSCN IS HEATED AT 210DEGREES (BATH TEMP.) 1 HR WITH STIRRING TO GIVE 16PERCENT III, M. 241-3DEGREES (AQ. ME SUB2 CO). THE UV SPECTRA OF II AND III ARE MEASURED IN 95PERCENT ETOH. THE BIOL. ACTIVITY OF II IS TESTED.

FACILITY: MOSK. KHIM. TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

UDC 547.752.+542.943'95

USSR

RUSINOVA, V. N., SMUSHKEVICH, YU. I., KOZLIK, T. A., and SUVOROV, N. N.,
Moscow Chemical Technological Institute Imeni D. I. Mendeleyev

"Indole Derivatives. LXXX. Novel Oxidative Rearrangement in the Indole Series"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 8, No 8, Aug 72, pp 1735-1739

Abstract: A new oxidative rearrangement was studied in the indole series on the example of the reaction of 3-(α-methylaminobenzyl)indole with KCN in presence of atmospheric oxygen. 2-Cyano-3-benzoyl-indole, 3-benzoylindole and indolyl-3-phenylacetonitrile were obtained as reaction products. The rearrangement to 2-cyano-3-benzoylindole does not occur in an inert atmosphere. It is an intermolecular rearrangement. It has been shown that indolyl-3-phenylacetonitrile reacts with various nucleophilic reagents forming 2-substituted 3-benzoylindoles.

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UDC: 615.31:547.753'.012.1:542.9

USSR

SUVOROV, N.N., SMUSHKEVICH, YU.I., MAR'YANOVSKAYA, N.N., SULIMA, A.V., Moscow Institute of Chemical Technology imeni D.I. Mendeleyev, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR

"Derivatives of Indole. LXI. Synthesis of 4(5)-(Indolyl-3)-Imidazole"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, Vol 6, No 2, Feb 70, pp 10-12

Abstract: Continuing studies on the synthesis of indolylazoles, the authors prepared 4(5)-(indolyl-3)-imidazole (II) and studied its biological activity. The formamide method, consisting of the reaction of alpha-substituted ketones or alpha-diketones with formamide, was used to prepare (II) from 3-chloroacetylindole. The structure of (II) was confirmed by elemental analysis and special methods (paramagnetic resonance and infrared and mass spectra) and also by reverse synthesis. In the infrared spectrum of (II) absorption bands were observed at 3400 cm-1 (NH of indole ring) and at 3200-3100 cm-1 (NH of imidazole ring). 2-Mercapto-4(5)-(indolyl-3)-imidazole was also prepared by the reaction of the chloroanhydrate of 3-aminoacetylindole with potassium thiocyanate. The biological activity of (II) was studied at the All Union Scientific Research Chemico Pharmaceutical Institute imeni S. Ordzhonikidze. Under laboratory biocontrol during investigation of antiinflammatory action by Doctor of Biological Sciences S.S. LIBERMAN, it was established that (II) decreases the weight of granuloma; however, in activity it

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USSR

SUVOROV, N.N., et al, Khimiko-Farmatsevticheskiy Zhurnal, Vol 6, No 2, Feb 70, pp 10-12

is inferior to phenylbutazone. Results of tests conducted in the chemico-therapy branch by Senior S ientific Worker T.N. ZYKOVA under the direction of Corresponding Member of the Academy of Medical Sciences USSR G.N. PERSHIN showed that the product also possesses bacteriological activity in relation to mycobacteria of tuberculosis (strain H37Rv). However, it inhibited the growth of tubercular bacillus only in a concentration of 250 mgm/ml.

2/2

UDC 548.5:531.717

USSR

IOFFE, Ya. I., SMUSHKOV, I. V., and SHERMAN, Yu. I., All-Union Scientific Research Institute of Single Crystals

"Device for Measuring the Diameter of Single Crystals During Growing"

Moscow, Zavodskaya Laboratoriya, No 2, 1971, pp 239-240

Abstract: A device developed at the All-Union Scientific Research Institute of Single Crystals for measuring the diameter of single crystals during growing is described. The measuring technique, based on photographic recording of the dislocation of a bright edge on the side of the crystal opposite the illuminated side, is discussed with reference to the optical diagram of the photorecorder. Whereas the generally used visual measuring method has an accuracy which does not exceed ± 10 mm, the present method is accurate to 0.5 mm.

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UDC 621.771.25

USSR

KOTESHOV, N. P., Candidate of Technical Sciences, BILYARCHIK, R. L., Engineer, and SMUTKO, V. V., Engineer, Dnepropetrovsk Metallurgical Institute and the Dnepropetrovsk Cast Iron Roller Plant

"Effect of Casting Conditions on the Service Characteristics of Small Rollers Made of Magnesium Cast Iron Alloy"

Moscow, Stal', No 1, Jan 71, p 49

Abstract: For modern, highly productive mills, rollers with a hardness of at least 370 HB and with durability are required. This paper describes the methods used by the Dnepropetrovsk Cast Iron Roller Plant for manufacturing rollers with these requirements. The magnesium cast iron alloy also includes Ni (0.8-1.4%) and Cr (0.4-0.8%). In selecting the furnace charge, it was established that a reduction from 45-55% to 24-30% of the quantity of coke iron would improve the durability of the metal. It was also found that a reduction in the carbon content from 3.8% to 2.8-3.2% noticeably reduced the transcrystalline structure, thus improving the iron in the working layer of the roller when cooled at the rate of 2.8 degrees per second. The effect of chromium was also tested in the carbon content range of 2.8 to 3.8%, and

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USSR

KOTESHOV, N. P., et al., Stal', No 1, Jan 71, p 49

was found to depend on the quantity of carbides in the surface layer of the rollers and on their distribution over the roller cross section.

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UDC: 51:621.391.

USSR

SMYSHLYAYEV, G. G.

"On the Possibilities of Simultaneous Transmission of Several Sequences of Maximum Length"

Sb. tr. Nauchno-tekhn. konferentsii prof.-prepodavat. sostava Vses. zaochn. elektrotekhn. in-ta svyazi. Vyp. 5 (Collected Works of the Scientific and Technical Conference of the Professional and Teaching Staff of the All-Union Electrical Engineering Correspondence Institute of Communications. No 5), Moscow, 1970, pp 128-132 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V574)

Translation: Some simple considerations are presented on simultaneous transmission of information from m sources of binary data through a single 2m-nary channel, some pseudonoise sequence of length n (consisting of ±1) with zero pause being set in correspondence with a "one" at the output of each source. The pseudonoise sequences of all sources are then added by digital place, and the resultant 2m-nary sequence of length n is transmitted through the communications channel. Yu. Pyatoshin.

1/1

Ref. Code: UR0396

Acc. Nr: AP0052082

PRIMARY SOURCE: Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, 1970, Vol 14, Nr 1, pp82-83

THE ACTIVITY OF THE ENZYMATIC SYSTEM CYTOCHROMOXIDASE-CYTOCHROME C AND COPPER CONTENT IN THE TISSUES OF ANIMALS SUFFERING FROM EXPERIMENTAL LEUKEMIA

O. K. Smushlyaev

A reduction of the activity of the enzymatic system cytochromoxidase-cytochrome C was seen in all the tissues of mice of the C57/Bl strain suffering from experimental leukosis. Copper content was reduced in the spleen and kidney; on the contrary, in the muscle it was elevated.

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REEL/FRAME
19820620

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--COMPLEX OXALATES OF MANGANESE(II) STUDIED BY A SOLUBILITY METHOD

-U-

AUTHOR-(03)-SMYSHLYAYEV, S.I., VOYTKO, L.M., TARASENKO, A.G.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., PISHCH. TEKHNOL. 1970, (1), 49-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXALATE, COMPLEX COMPOUND, MANGANESE COMPOUND, IONIC BONDING, SOLUBILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1571 STEP NO--UR/0322/70/000/001/0049/0050

CIRC ACCESSION NO--AT0116979

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--30OCT70

2/2 009

CIRC ACCESSION NO--AT0116979

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF MNC SUB2 O SUB4 IN AQ. SOLNS. OF NA AND K OXALATES (CONCNS. OF 0.0047-0.1128MU) WAS STUDIED AT 25DEGREES. STABILITY CONSTS. KAPPA OF THE OXALATE COMPLEXES WERE CALCD. FROM THE DEPENDENCE OF KAPPA ON IONIC STRENGTH MU THE KAPPA AT MU EQUALS 0 WAS DETD. AS KAPPA EQUALS 1.5 TIMES 10 PRIME NEGATIVE6 AND 2.5 TIMES 10 PRIME NEGATIVE6 FOR NA SUB2 C SUB2 O SUB4 AND K SUB2 C SUB2 O SUB4 SOLNS., RESP. SOLY. OF MNC SUB2 O SUB4 IN H SUB2 O AT 25DEGREES WAS DETD. AS 0.003 MOLE PER L. FACILITY: KRASNODAR. POLITEKH. INST., KRASNODAR, USSR.

UNCLASSIFIED

USSR

UDC 551.787.913.087.92

KSENOFONTOV, M.YE., PAPLOVA, T.T., MIRONOV, A.I., SMYSLOV, I.I., RAPATSKAYA, I.V.

"Tensotransducers Based On Silicon-Spinel"

V sb. Pribory tochnoy mekh. i tekhnol. priborost. (Devices Of Precision Mechanics And Technology Of Instrument Construction--Collection Of Works), Moscow, 1971, pp 36-38 (from RZh:Elektronika i yeye primeneniye, No 2, Feb 72, Abstract No 2B382)

Translation: Tensotransducers [tenzopreobrazovatel'] (T) based on Si-spinel were produced by build-up on spinel wafers (ground, polished, and annealed in a H_2 flow at a 1500° C temperature) of a monocrystalline layer of Si by pyrolysis of the spinel. With the aid of photolithography, tensoresistors were produced on the structure prepared, the outlets to which were produced by thermocompression. The T produced had the characteristics: resistance, 480 ohm; resistivity, 0.01 ohm.cm; temperature coefficient of resistance, 9.1×10^{-4} $^{\circ}C^{-1}$; coefficient of tensosensitivity (as a function of crystallographic orientation) 55 ÷ 95. 1 ill. 2 tab. 2 ref. V.B.

1/1

USSR

UDC: 621.472:621.383

GUTKIN, A. A., DMITRIYEV, M. V., and SMYSLOV, Yu. N.

"Optical Constants of a Gold Film and Light Transmission Coefficient of a Semiconductor for Au-GaAs and Au-GaP Photoconverters in the 254-644 nm Wavelength Range"

Tashkent, Geliotekhnika, No 1, 1972, pp 19-24

Abstract: To fill out what the authors, associated with the A. F. Ioffe Physico-Technical Institute, regard as incomplete experimental data of the effective optical constants of gold films obtained through sputtering in a vacuum, the present article determines the constants. It computes the index of refraction, the absorption factor, and the effective thickness of the films from experimental data of the transmission factor and reflection coefficient of the thin gold film on a quartz substrate, under visible and ultraviolet light. The film thickness amounted to 8-40 nm. Results of this experimentation, made with an error factor of no more than 5%, agreed closely with the results of earlier data obtained in the spectral range of 253.6-643.8 nm by R. Philip (J. Phys. Radium, 20, 535, 1959). With the values of the factors obtained by the authors, they computed the light transmission factor of Au-GaAs and Au-GaP surface barrier photoelements.

1/1 - 74 -

USSR UDC 541.49:547.558.1:547.355.9

NESMEYANOV, A. N., KONSVALOVA, E. G., KRIVYKH, V. V., KOSINA, A. N., FRAIND-BERG, K. I., and SHCHIGOLA, R. I., Moscow State University imeni M. V. Lomonosov

"Triphenylphosphine Complexes of Benzyl- and Vinylgold"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 3, 1972, pp 653-654

Abstract: Alkyl and aryl compounds of monovalent gold are stable only in the form of triphenylphosphine complexes. The benzyl compound was synthesized according to the reaction

$$C_6H_5CH_2MgCl + Cl\,Au \cdot P(C_6H_5) \longrightarrow C_6H_5CH_2Au \cdot P(C_6H_5)_3$$

The yield was 85% in toluene and 40% in tetrahydrofuran. The nmr spectrum of the product indicated a proton signal in the phenyl group (in the range of 6.9-7.3 m.d.) and two signals from the methylene group (in the range of 2.54 to 2.76 m.d.). By using the double nuclear magnetic resonance of H^1-P^{31}, it was shown that the interaction of the protons from the methylene group with phosphorus caused peak splitting. The vinyl compound was obtained from the reaction

$$CH_2 = CHMgBr + Cl\,Au \cdot P(C_6H_5)_3 \xrightarrow[50^\circ]{THF} CH_2 = CH\,Au \cdot P(C_6H_5)_3$$

The yield was 90%. 1/1

USSR

UDC 542.957:547.355.9:547.558.1

GRANDBERG, K. I., SMYSLOVA, Ye. I., and KOSINA, A. N., Institute of Metal Organic Compounds, Academy of Sciences USSR

"Reactions of Vinyl(triphenylphosphine) Gold"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 12, Dec 73, pp 2787-2789

Abstract: When vinyl(triphenylphosphine) gold (I) is reacted with electrophilic reagents -- acids, halides, mercury salts -- the gold-carbon bond is broken. Borohydrofluoric acid converts (I) into the borofluoride of gold organic complex cation containing two atoms of gold. With potassium permanganate in acetone (I) yields one of the first representatives of α-aurylated ketones -- triphenylphosphine-gold keton.

USSR

UDC 542.957:547.559.59'118:547.284.3

NESMEYANOV, A. N., GRANDBERG, K. I., SMYSLOVA, YE. I., and PEREVALOVA, E. G., Moscow State University Imeni M. V. Lomonosov

"Triphenylphosphinegoldacetone"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 10, Oct 72, p 2375

Abstract: Reaction of vinylgoldtriphenylphosphine with an acetone solution of potassium permanganate at 0° yields triphenylphosphinegoldacetone (I). HCl, $HgCl_2$ and Br_2 add to (I) in the 1,2-position, while acetyl chloride reacts via 1,4-addition yielding isopropenylacetate and triphenylphosphinegold chloride.

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USSR

UDC 547.13

PEREVALOVA, E. G., LEMENOVSKIY, D. A., BAUKOVA, T. V., SMYSLOVA, YE. I., GRANDBERG, K. I., and NESMEYANOV, A. N., Moscow State University imeni M. V. Lomonosov

"Reaction of Ferrocenyl- and Phenyl(triphenylphosphine)gold with Electrophilic Reagents"

Leningrad, Doklady Akademii Nauk SSSR, Vol 206, No 4, Oct 72, pp 883-996

Abstract: Reactions of ferrocenyl- and phenyl(triphenylphosphine)gold with electrophilic reagents was studied. No elsctrophilic substitution at the gold atom took place in these reactions, the products indicating that a homolytic process occurred in these reactions. For example, when gerrocenyl-(triphenylphosphine)gold reacted with acetic anhydride or acyl chlorides of acetic or trichloroacetic acids, only ferrocene, biferrocenyl and a salt of the composition $XAuP(C_6H_5)_3$ where X = Cl or $OCOCH_3$ were formed. No acyl-ferrocene was isolated. Analogous reactions occur with phenyl(triphenyl-phosphine)gold, no electrophilic substitution taking place. The results obtained can be explained by the single electron transfer mechanism, this being the first step in a series of reactions. The electron from the C-Au bond is transferred to the splitting reagent, which acts as an electron acceptor.

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UDC 535.89

BORISEVICH, N. A., GRUZINSKIY, V. V., PALTARAK, N. M., SNAGOSHCHENKO, L. P., SUCHKOV, V. A.

"Generation and Tuning of the Radiation Bands of a Laser Based on Solutions of Certain Organic Compounds"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 14, No 1, Jan 71, pp 41-44

Abstract: The generation of solutions of oxazole and oxadiazole solutions that differ in the type and position of substitutes and have one or two oxazole rings was studied. Generation of tetraphenylbutadiene and a solution of a coumarin mixture was also obtained. Compounds of these classes are activators of organic scintillators. They were effective active media for liquid lasers in the ultraviolet and blue regions of the spectrum. A table is given showing the name of the substances, the position and width of the strongest part of the generation bands, and the concentration of the solutions for which generation was obtained. Duration of fluorescence is given for the smallest concentrations (10^{-3} g/l) for which the monomer molecules fluoresce. The generation bands were tuned with a diffraction grating (1200 lines/mm) which concentrated 70% of the reflected light. The second mirror

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BORISEVICH, N. A., et al., Zhurnal Prikladnoy Spektroskopii, Vol 14, No 1, Jan 71, pp 41-44

of the resonator was a wide-band mirror. The use of a grid made it possible to narrow considerably and frequency tune the generation bands. For tetraphenylbutadiene with a generation band width of 16 nm, the range of smooth tuning of the generation frequency was 70 nm (480-550 nm). Of greatest interest was the tuning of generation bands of solutions of oxazole and oxadiazole derivatives, since their position was little dependent on experimental conditions in operating with a nonselective resonator.

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1/2 018 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--KINETIC MODEL OF THE CATALYTIC OXIDATIVE DEHYDROGENATION OF N BUTENES OF 1,3,BUTADIENE -U-

AUTHOR-(05)-BAKSHI, YU.M., SNAGOVSKIY, YU.S., GURYANOVA, R.N., GELBSHTEYN, A.I., OSTROVSKIY, G.M.

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CIRC ACCESSION NO--AP0112867

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A KINETIC MODEL FOR A COMPUTER PROGRAM WAS USED TO CALC. RATE CONSTS. WITH AN AV. RELATIVE ERROR IS SMALLER THAN OR EQUAL TO 20PERCENT (20-30PERCENT FOR O-CONTG. BY PRODUCTS) FOR N BUTENE CONVERSION TO H SUB2 C:CHCH:CH SUB2 (I) DURING OXIDATIVE DEHYDROGENATION AT 425-70DEGREES OF A BUTENE FRACTION (29.6PERCENT 1, 22.6PERCENT CIS,2, AND 31.6PERCENT TRANS,2,BUTENE,3.12PERCENT H SUB2 C:CME SUB2, 2.3PERCENT I, AND 10.7PERCENT OTHER C SUB2-4 HYDROCARBONS) ON AN UNSUPPORTED, PROMOTED 1:1 BI-MO CATALYST. AT 470DEGREES WITH A FEED MIXT. CONTG. C SUB4 H SUB8, O, N, AND H SUB2 O IN A RATIO OF 1:1.8:18.5:3.9, WITH CONTACT TIME 8.2 SEC, CONVERSION AND SELECTIVITY WITH RESPECT TO I WERE CALCD. TO BE 75 AND 72PERCENT AND WERE FOUND EXPTL. TO BE 75 AND 68PERCENT, RESP. CONSTS ENTERING INTO THE RATE EQUATIONS WERE DETD. WITH THE USE OF A STEEPEST DESCENT ALGORITHM METHOD FOR FINDING THE MIN. OF A FUNCTION OF IN A AND E VALUES OF THE ARRHENIUS EQUATIONS. FACILITY: NAUCH. ISSLED, FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

Construction

UDC 624.131.43:531.5

USSR

CHERKASOV, I. I., MIKHEEV, V. V., PETRUKHIN, V. P., PAKULIN, V. A., SNARSKII, A.S., and SHVAREV, V. V.

"Effect of Gravity on Mechanical Properties of Soils"

Moscow, Osnovaniya, fundamenty i mekhanika gruntov. No 1, 1970, pp 14-18

Abstract: Results are given of an experimental investigation of the effect of gravity on mechanical properties of soils, conducted in an aircraft and in a centrifuge. The first series of experiments were conducted in a specially equipped TU-104 aircraft flying along a specific trajectory. Along a section of this trajectory the soils were subjected to an acceleration $a = 1.62 m/sec^2$ for 8 seconds, i.e. 1/6 g at ground level. The second series were conducted on a centrifuge, on which soils were subjected to 55.1, 98.1 and $196.2 m/sec^2$ acceleration, i.e. 5.6,10, and 20 g. Both series of tests contained controlled tests in motionless aircraft and centrifuge. The overload coefficient $\eta = a/g$ varied from 0,165 to 20. Experimental setups and techniques for both the aircraft and centrifuge tests are described in detail. A photograph of the airborne equipment and a schematic drawing of the centrifuge are presented. Four types of soils were tested, whose physico-mechanical properties are given in a table. They are: 1)silica sand;

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CHERKASOV, I.I., et al., Osnovaniya, fundamenty i mekhanika gruntov. No 1, 1970, pp 14-18

2) agloporite gravel with negligible bond and of low specific weight; 3) keramsit gravel, loose material with rounded granules; 4) soft plastic clay of great specific weight, with strong bond and small internal friction angle. The results are presented in graphs and tables. They show that at 6g the angle of rest in agloporite and keramsit gravels decreases while it remains nearly constant in the silica sand. An analysis of motion picture records shows that a certain reduction in angle of rest is related to the aircraft vibration. Thus, it is considered that the variation of gravity has no effect on the angle of rest of loose granular soils. A specially adapted M-700 oscillograph was used for recording experiments in the centrifuge. The deformation aptitude of both type of soils was determined, taking the sag of the pressing stamp under 1kg/cm^2 pressure on the base, as a comparability criterion.

A comparison with theoretical data for carrying power shows that: 1) the gravity variation in accordance with the theory of limit equilibrium, substantially affects the carrying power of sand and weakly affects that of plastic clay; 2) in contrast to the theory of limit equilibrium the carrying power of sand varies a little less than in direct proportion to gravity. The carrying power of clay does not remain constant, but increases slightly with gravity. The causes of these discrepancies are discussed and tentatively explained. Orig. art. has: 6 figures, 7 tables.

UDC: 621.396.677.71

USSR

PIMENOV, YU. V. and SNEG, L. N.

"Studying an Annular Slit Cut in an Ideally Conducting Disc With a Large Radius"

Moscow, Radiotekhnika, No 7, 1970, pp 32-38

Abstract: The authors derive formulas for calculating the directivity diagrams of a disc excited by a unilateral, annular slit. Normalized directivity diagrams are given for ka=10 at various kl values along with normalized directivity diagrams for a disc excited by two unilateral, annular slits. Calculations show that two of the derived formulas interlock in the $25^\circ<\theta<35^\circ$ region at ka=10 while two others interlock in the $145<\theta<155^\circ$ region. The interlocking regions of the formulas shift toward the z axis as the r parameter is increased. The precision of the solution increases with the magnitude of ka and kl. The original article has six figures and 16 formulas.

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1/2 024 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--USE OF EXPANDING PLUGGING CEMENT IN THE WELLS OF UNDERGROUND GAS STORAGE TANKS -U-

AUTHOR-(04)-DANYUSHEVSKIY, V.S., SNEGIREV, N.P., ROZOV, V.N., CHAO, P.H.

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