Standard transformation ... S/236/62/000/003/001/004
D234/D308

universitet im. V. Kapsukasa (Vilnyus
University im. V. Kapsukas)

SUBMITTED: January 25, 1962

Card 3/3

S/236/62/000/001/001/007
D234/D308

AUTHORS: Zhvironayte, S.A., Vizbarayte, Ya.I. and Yutsis, A.P.

TITLE: Calculation of matrix elements of the energy operator in the case of a single electron outside a partially filled shell

SOURCE: Akademiya nauk Litovskoy SSR. Trudy. Seriya B, no. 1(28), 1962, 3-15

TEXT: The authors refer to their previous paper (Trudy AN Litovskoy SSR, B 4(27), 59, 1961) where general expressions were derived for the matrix element of a single electron outside a shell. If the shell is almost completely filled, these expressions can be simplified by making use of the properties of the operators of complementary shells (the configuration l^{4l+2-N} and l^{N}). The operator of electrostatic interaction energy is discussed and general expressions are obtained for the coefficients of radial integrals of electrostatic interaction of exchange type, for the four kinds of coupling LS, J_0l, LS_0 and J_0j. These coefficients are computed for a

Card 1/2

S/236/62/000/001/001/007
D234/D303

Calculation of matrix elements ...

p^4l configuration with $^1S_0$ coupling. Energy levels of Ne II in the $1s^22s^22p^44f$ configuration, computed by the authors for J_0l and $^1S_0$ coupling, are compared in a diagram with the experimental levels. It is concluded that the J_0l coupling can be used for classification of the levels, while the $^1S_0$ coupling is useless. There are 1 figure and 1 table.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, AS Lith-SSR), Vil'nyusskiy gosudarstvennyy universitet im. V. Kapsukasa (Vilna State University im. V. Kapsukas)

SUBMITTED: July 6, 1961

Card 2/2

3 136
S/058/62/000/004/010/160
A058/A101

24.4400

AUTHORS: Yutsis, A. P., Vizbarayte, Ya. I.

TITLE: On the forms of equations of the self-consistent field

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4,1962, 25, abstract 4A193 ("LietTSR Mokslų Akad. darbai, Tr. AN LitSSR", 1961, B3 (26) 11 - 17, Lith. summary)

TEXT: It is pointed out that neglect of exchange terms between shells in the Fok equations leads to equations which in the general case differ essentially from the Hartree equations. On the other hand, utilization of the wave function of the whole atom in the form of a unique product of one-electron wave functions is ambiguous. It is shown that the Hartree equations can be derived unambiguously by using the wave function of the whole atom in the form of a product of radial wave functions. The ambiguity in the "unlimited" Hartree-Fok method is indicated, an ambiguity consisting in the selection of a unique determinant through which the wave function of the whole atom is expressed.

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/004/009/160
A058/A101

24.4400

AUTHORS: Yutsis, A. P., Shugurov, V. K., Vizbarayte, Ya. I., Eringis, K. K.

TITLE: Concerning the calculation of matrix operator elements in an expanded calculation method

PERIODICAL: Referativnyy zhurnal, Fizika, no. 4, 1962, 25, abstract 4A192 ("LietTSR Mokslų Akad. darbai, Tr. AN LitSSR", 1961, B3 (26), 81 - 92, Lith. summary)

TEXT: For expressing matrix operator elements of atomic quantities in the case of an expanded calculation method, there was used the wave function of the whole atom expressed with the aid of a geneological coefficient. Expressions were found for which one- and two-electron submatrix elements must be substituted in the formulae of the conventional (unexpanded) calculation method in order to derive expressions for matrix operator elements in the expanded calculation method. At the same time, the rest of the operation of calculations on expressing matrix elements through radial integrals is the same as in the conventional calculation method.
[Abstracter's note: Complete translation]

Card 1/1

DAGIS, R.S. [Dagys, R.]; VIZBARAYTE, Ya.I. [Vizbaraite, J.]

Theoretical determination of the fine structure of NI and OII atoms in the configuration $1s^2 2s^2 2p^2 nl$. Liet ak darbai B no.1:71-85 '60. (EEAI 9:10)

1. Vil'nyusskiy gos. universitet im. V.Kapsukasa i institut fiziki i matematiki AN Litovskoy SSR.
(Atoms)

VIZBARAYTE, Ya. I.

B-3

USSR/Physical Chemistry - Atom

Abs Jour : Ref Zhur - Khimiya, No 5, 1957, No 14334

Author : Vizbarayte, Ya. I., Shirona, V.I., Kavetskis, V.I., and Yutsis, A.P.

Inst : Not given

Title : Self-Consistent Fok Field in the Polyconfiguration Approximation for the Helium Atom

Orig Pub : Optika i Spektroskopiya, 1956, 1, No 3, 277-281

Abstract : Solutions are given of the Fok equations in the two-configurational approximation for the configurations $2p^2$, $2s^2$, $3d^2$, and $3p^2$ which are regarded as pertinent configurations with respect to the basic configuration of the helium atom. By means of these solutions, the corrections are determined for the energy of the basic configuration for different polyconfigurational approximations. Values are also given of the energy obtained by means of the method of the self-consistent.....

Card : 1/2

USSR/Self-consistent Fok field in the Polyconfigurational approximation for the helium atom B-3

Abs Jour: Ref Zhur-Khimiya, No 5, 1957, 14334

Abstract: Fok field in the six-configurational approximation $1s^2$-$2p^2$-$2s^2$-$3d^2$-$3p^2$-2p3p and are compared with the experimentally determined value of the energy.

Card 2/2

Vizbaraytė, Y.

USSR/Atomic and Molecular Physics - Physics of the Atom. D-1

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11355

Author : Batarunas, I.V., Vizbarayte, Ya.I., Yutsis, A.P.
Inst :
Title : The Fock Self-Consistent Field in Two-Configuration Approximation for Atoms of the Boron Type.

Orig Pub : Liet. TSR Mokslu Akad. darbai, Tr. AN Lit SSR, 1956, B4, 15-20.

Abstract : Solutions are given for the Fock equation in the two-configuration approximation for the 2p radial wave function, taken into account by the configuration of the two-configuration approximation

$1s^2 2s^2 2p$ -- $1s^2 2p^3$ and the values of the energies of the 2s and 2p electrons for B, C , N^{2+}, and O^{3+}.

Card 1/1

VIZVARAYTE, Ya.I.

USSR/Physical Chemistry - Atom

B-3

Abs Jour : Ref Zhur - Khimiya, No 5, 1957, 14333

Author : Vizvarayte, Ya.I., Kavetskis, V.I., and Yutsis, A.P.
Inst : Not given
Title : Polyconfigurational Approximation in the Case of Helium-Type Atoms

Orig Pub : The polyconfigurational approximation is applied to the basic configuration of helium-type atoms from H^- to C^{4+} by a method which, in the case of the basic configuration, utilizes the results of the self-consistent field, while the corrections to the energy for the polyconfigurational approximation are determined by means of hydrogen-type analytical wave functions. The resulting values of the full energy are compared with the results of the method of incomplete separation of variable and with experimental data.

Card : 1/1

VIZBARAYTE, Ya.I.; CHIPLIS, V.I.; YUTSIS, A.P., akademik

Selection rules for electron transitions with various types of bonds. Dokl. AN SSSR 135 no.5:1101-1103 D '60. (MIRA 13:12)

1. AN LitSSR (for Yutsis). 2. Institut fiziki i matematiki AN LitSSR.

(Electrons)

USSR/Atomic and Molecular Physics - Atomic Physics D-1

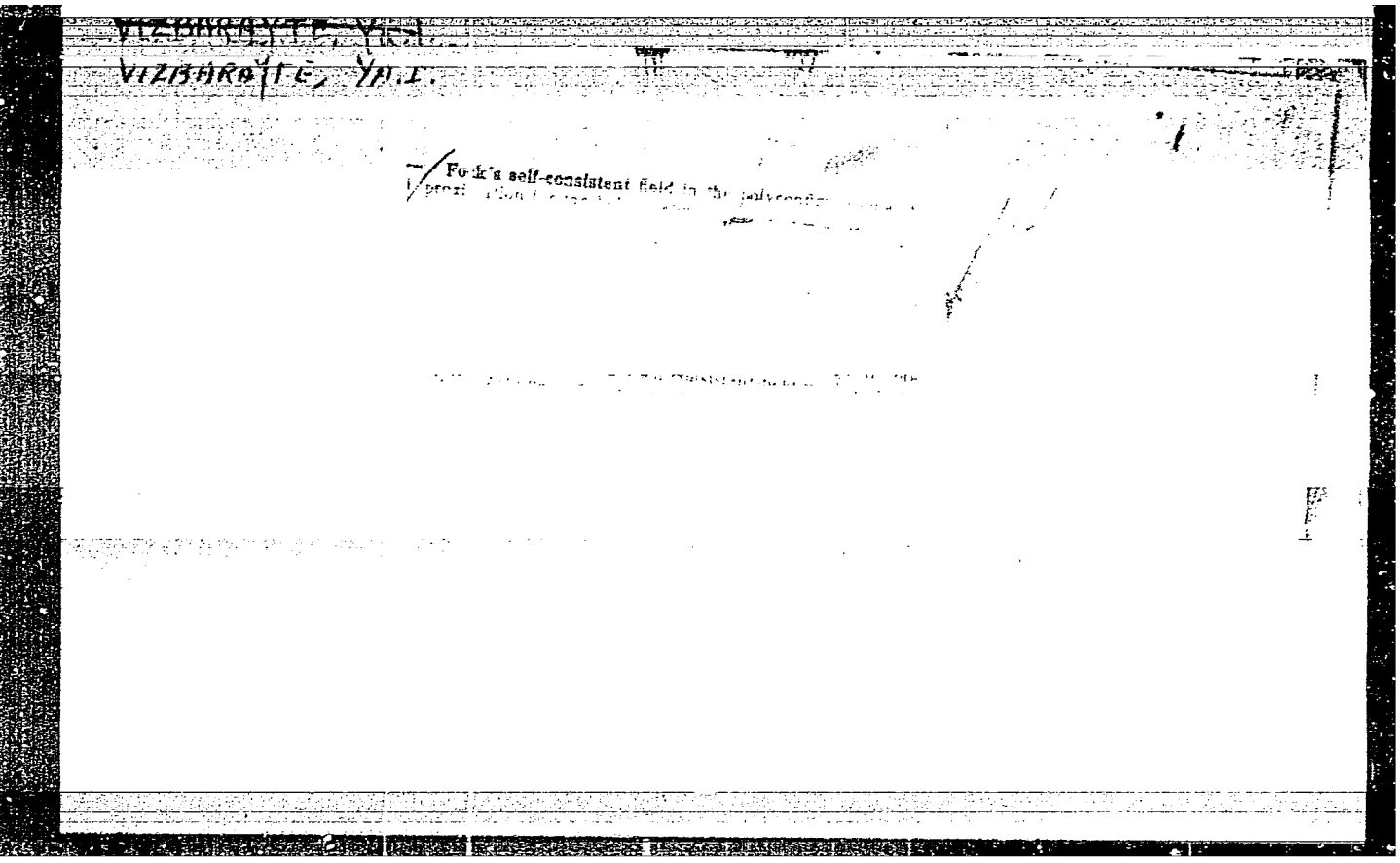
Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 8927

Author : Vizbarayte, Ya.I., Batarunas, I.V., Kibartas, V.V. Yutsis, A.P.
Title : The Fock Self-Consistent Field in the Two-Configuration Approximation for the Nitrogen Atom in Various Degrees of Ionization.

Orig Pub : Liet. TSR mokslu Akad. darbai Tr. AN Lit SSR, 1956, 5B, 3-10

Abstract : The Fock equation is solved in the two-configuration approximation for a radial wave function 2p taken into account by the configuration $1s^2\ 2p^{q+2}$ of the two-configuration approximation $1s^2 2s^2 sp^q - 1s^2 sp^{q-1}$ at q = 2, 3, and 4 for the case of the nitrogen atom. The values of the energies of the 2s and 2p electrons are determined and compared with experimental data.

Card : 1/1



VIZBARAITE, YU.I.

Fock's self-consistent field in the

VITZBARAITE, V. I

VITZBARAITE, V. I

Polyconfigurational approximation in the case of helium-type atoms. Va. I. Vitsbaraite, Y. I. Kavetskis, and [illegible] P

By using the correction factors by means of the H-type, ana- [illegible] lytical wave functions.

VIZBARAYTE, Ya. I.

"Fok Self-Consistent Field for an Excited Helium Atom," by Ya. I. Vizbarayte, A. I. Kantserevichyus, and A. P. Yutsis, (Vilno University) Optika i Spektroskopiya, 1956, 1, No 1, pp 9-16 (from Referativnyy Zhurnal, Fizika, No 1, Jan 57, Abstract No 733)

Solutions of Fok self-consistent field equations for configurations 1s2s, 1s2p, 1s3p, and 1s4p of the helium atom are presented. Simplification of these equations is discussed. Simplified Fok equations for configurations 1s5p, 1s6p, 1s3d, 1s4d, 1s5d, and 1s6d of the helium atom are solved. These equations allow determination of total energy. The values of full dipole force for transition between the basic and the excited configuration of the helium atom are presented, as well as transitions between excited configurations. (U)

Sum in 1451

VIZBARAITE, Ya. I.

USSR

539.153

6534. The triplet splitting of terms of the carbon atom in configuration $1s^2 2s^2 2p3p$. V. K. SHUGUROV, YA. I. VIZBARAITE AND A. P. YUTSIS. *Zh. eksper. teor. Fiz.*, 23, No. 3, 265–8 (1953) *In Russian.*

Expressions are given for the elements of the energy matrix of spin interaction, using the radial integral for an atom in the $1s^2 2s^2 2p3p$ configuration. The triplet splitting of C atoms in this configuration is determined, allowance being made for the non-diagonal matrix elements, with the use of one-electron wave-functions of a self-consistent field without quantum exchange. See Abstr. 7203 (1949), 3661 (1953).

F. LACHMAN.

VIZBARAYTE, Ya. I.

Fock's self-consistent field for an excited helium atom. Ya. I. Vizbaraite, A. I. Kantserevichyus, and A. P. Yutsis (State Univ., Vilnyus, Lithuania). *Optika i Spektroskopiya* 1, No. 1, 9–16(1956).—Fock's equations are solved for the $1s2s$, $1s2p$, $1s3s$, $1s3p$, $1s4p$ configurations for the He atom. Fock's equations are simplified and solved for the $1s5p$, $1s6p$, $1s3d$, $1s4d$, $1s5d$, and $1s6d$ configurations of He. From these, values of the total energy are calcd. which agree very well with exptl. data. J. Rovtar Leach

VIZBARAYTE, Ya. I.[Vizbaraite, J.]; VOSILYUS, I. I.[Vosylius, J.]; SAVUKINAS, A. Yu.[Savukynas, A.]; YUTSIS, A. P.[Jucys, A.]

Two-electron matrix elements of energy operator in the case of jl coupling. Liet ak darbai B no.1:23-42 '61. (EEAI 10:9)

1. Institut fiziki i matematiki Akademii nauk Litovskoy SSR i Vil'nyusskiy gosudarstvennyy universitet im. V. Kapsukasa.

(Matrices) (Electrons) (Functions)

VIZBARAYTE, Ya. I.[Vizbaraite, J.]; VOSILYUS, I. I.[Vosylius, J.]; SAVUKINAS, A. Yu.[Savukynas, A.]; YUTSIS, A. P.[Jucys, A.]

Application of the jl coupling in the case of excited nitrogen ion. Liet ak darbai B no.1:43-48 '61. (EEAI 10:9)

1. Institut fiziki i matematiki Akademii nauk Litovskoy SSR i Vil'nyusskiy gosudarstvennyy universitet im. V. Kapsukasa.

(Nitrogen) (Ions) (Matrices)

86829

S/020/60/135/005/017/043
B019/B067

24.4500

AUTHORS: Vizbarayte, Ya. I., Chiplis, V. I., and Yutsis, A. P., Academician of the AS Litovskaya SSR

TITLE: Selection Rules of Electron Transition in Various Types of Coupling

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 5, pp. 1101-1103

TEXT: The authors studied electrical single-electron multipole transitions with configuration $l^q l'$, where an LS coupling exists in the l^q shell. It is assumed that this shell is characterized by the quantum numbers $L_0 S_0$, which together with the single-electron momenta l's' of various types of coupling give the momentum J. Besides the known LS and Jj couplings, the Jl and LS_0 couplings introduced by Racah et al. (Ref. 1) and A.M. Gutman et al. (Ref. 2) are of importance. These couplings are characterized by the intermediate quantum numbers $T_1 T_2$. Thus, the state under consideration

Card 1/3

Selection Rules of Electron Transition in Various Types of Coupling

S/020/60/135/005/017/043
B019/B067

is characterized by $nl^q\alpha_o L_o S_o n'l'T_1T_2JM$. The transitions $S(nl^q\alpha_o L_o S_o n'l'T_1T_2J, nl^q\alpha_o L'_o S'_o n''l''T'_1T'_2J') =$

$$= |(\alpha_o L_o S_o n'l'T_1T_2J\|T^{(k)}\|\alpha_o L'_o S'_o n''l''T'_1T'_2J')|^2 \qquad (1)$$

are studied, and the selection rules for the transition

$$l^q\alpha_o L_o S_o l'T_1T_2J - l^q\alpha_o L_o S_o l''T'_1T'_2J'$$

are summarized in Table 1. These ten selection rules are divided into five groups the first two of which are known. The three other groups comprise new selection rules. According to these selection rules, transition may occur only if the corresponding quantum number and the quantum numbers of the other configurations form a triangle or quadrangle. Important consequences of these new selection rules are discussed. There are 1 table and 4 references: 2 Soviet and 2 US.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk LitSSR (Institute of Physics and Mathematics of the Academy of Sciences Litovskaya SSR)

Card 2/3

86829

Selection Rules of Electron Transition in Various Types of Coupling

S/020/60/135/005/017/043
B019/B067

SUBMITTED: August 22, 1960

Правила отбора для перехода $l^n\alpha_1L_1S_1J_1T_1T_{z1}J \rightarrow l^n\alpha_2L_2S_2J_2T_2T_{z2}J$

1	2	3	4	5
$LS-LS$	J_1-J_1	$LS-Jl$	LS_0-LS_0	$Jl-Jl$
$LS-L'S'$	$J_0J'-J'_0J''$	$LS-J_0J''$	$LK-L'K'$	$J_0K-J'_0K'$
$(LL'k)$ $(SS'0)$	$(J_0J'_00)$ $(l'l''k)$	$(J_0l''s'J)$ $(SL_0l''J'')$ $(L)(l'')$	$(LL'k)$ $(KK'k)$	$(KK'k)$ $(J_0J'_00)$
6	7	8	9	10
$LS-LS_0$	$LS-Jl$	$Jl-LS_0$	LS_0-Jl	$Jl-Jl$
$LS-L'K$	$LS-J_0K_1$	J_0K-LK'	$LK-J_0J''$	$J_0K-J'_0J''$
$(LL'k)$ $(SL'J')$ (K)	(LKS_0k) $(J_0l''s'J)$ $(SL_0l''J')$	$(KK'k)$ $(J_0l''K')$ (L)	$(J_0l'K)$ $(L)(l'')$	$(J_0J'_00)$ $(K)(l'')$

Card 3/3

S/044/62/000/007/045/100
C111/C222

AUTHORS: Yutsis, A.P., Vizbaraytė, Ya.I.

TITLE: The mathematical problem of multiconfigurational approximation

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 74, abstract 7B360. ("Liet TSR Mokslų Akad. darbai", 1961, B 3(26), 3 - 10)

TEXT: The method formulated in the title is a modification of the quantum-mechanical minimum principle due to Ritz : The energy of the basic state (simplest case) is estimated as the minimum of the functional

$$E = \int \phi^* H \phi \, dx / \int \phi^* \phi \, dx .$$

Here H -- Hamilton operator, $\phi = \sum \lambda_i \varphi_i$ -- the trial function, λ_i -- variation parameters, φ_i -- a certain set of functions (e.g. anti-symmetric products of one-electron functions as in the method of Fok). The generalization consists in using as φ_i functions which are determined by variational methods. The arising new minimization conditions are

Card 1/2

The mathematical problem of ...

solved together with the preceding ones. This operation can be repeated. It is understood that the solution of these very extensive tasks is done with the aid of computing machines.

[Abstracter's note : Complete translation.]

Card 2/2

S/058/62/000/007/005/058
A061/A101

AUTHORS: Yutsis, A. P., Vizbarayte, Ya. I., Zhvironayte, S. A.

TITLE: Calculating the matrix elements of the energy operator in the case of one electron outside of an unfilled shell and for different types of coupling

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1962, 18, abstract 7A173 ("Tr. AN LitSSR", 1961, v. B, 4 (27), 59 - 72; Lith. summary)

TEXT: It is assumed that L-S coupling takes place in an unfilled shell, and that the resulting moments of this shell add vectorially to the moments of the outer electron in different types of coupling. The wave function is expressed by a linear combination of functions of the coupled moments. Expressions are given for the transformation matrices allowing for both the transition from the L-S coupling to other types and the coordinates interchange. Formulas are obtained for the matrix elements of electrostatic and spin-orbital interaction operators in different types of coupling.

[Abstracter's note: Complete translation]

Card 1/1

S/058/62/000/007/004/068
A061/A101

AUTHORS: Yutsis, A. P., Vizbarayte, Ya. I.

TITLE: Mode of calculating the matrix elements of operators of atomic quantities in the case of complex configurations

PERIODICAL: Referativnyy zhurnal, Fizika, no. 7, 1962, 18, abstract 7A172 ("Tr. AN LitSSR", 1961, v. B, 4(27), 45 - 57; Lith. summary)

TEXT: A mode of expressing the matrix elements of operators of atomic quantities through two-electron submatrix elements is offered for the case of an arbitrary number of unfilled electron shells. The wave function of the whole atom is conveyed in the form of an antisymmetrized wave function of the individual shells which are linked to one another by the vectorial summation of the moments of momentum. The symmetry of the operators and the antisymmetry of the wave functions of the individual shells make it possible to express the matrix elements of the operators directly with the aid of simple fractional parentage coefficients. As a result, the method suggested is simpler than the formalism that uses the so-called complex fractional parentage coefficients.

[Abstracter's note: Complete translation]

Card 1/1

S/044/62/000/007/046/100
C111/C222

AUTHORS: Yutsis, A.P., Vizbarayte, Ya.I.

TITLE: On the forms of the equations of the self-co-ordinated field

PERIODICAL: Referativnyy zhurnal, Matematika, no. 7, 1962, 74, abstract 7B361. ("Liet TSR Mokslų Akad. darbai", 1961, B3(26), 11-17)

TEXT: Considered are questions concerning the connection between the equations of the Fok type and of the Hartry type in the calculation of the energy states of an atom.

[Abstracter's note : Complete translation.]

Card 1/1

24,6520

S/020/60/135/004/011/037
B019/B077

AUTHOR: Vizbarayte, Ya. I., ~~Eringis~~, K. K., and Yutsis, A. P., Academician of the AS Litovskaya SSR

TITLE: About the Extended Methods of Hartree-Fok

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 4, pp. 809 - 810

TEXT: The authors outline the methods of Fok and Hartree in an extensive introduction, and discuss the determination of the wave function of the entire atom by using the extended methods of Hartree and Fok. It is noted that the equations of the extended methods of Hartree and Fok agree for the ground state of a helium-type atom. The application of this extended method is very complicated. In order to simplify calculation, the radial single-electron wave functions have to be determined by the extended method of Hartree (by solving the equations of the extended method of Hartree, or by finding the parameter of the analytical single-electron wave functions); all other calculations have to agree with the requirements of the extended method of Fok. The calculation of the $1s^2 2p^2$ configuration

Card 1/3

89018

of the beryllium atom where single-electron wave functions similar to hydrogen are used is presented to demonstrate the application of that extended method. There are 1 table and 7 references: 3 Soviet, 1 German, 1 British, and 1 US.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk LitSSR
(Institute of Physics and Mathematics, Academy of Sciences Litovskaya SSR)

SUBMITTED: August 22, 1960

	^1P	^1D	^1S
a	−1,451	−1,393	−1,306
б	−1,421	−1,355	−1,253
в	−1,430	−1,364	−1,276
г	−1,480	−1,509	−1,372

Legend to Table 1: The first row gives the energies of the sp^2 shell in Rydberg units; these values were obtained by the method outlined above. The second row gives corresponding values obtained by the non-extended method. The third row gives values obtained from solutions of the ordinary Fok equations. The fourth row gives experimental results.

Card 3/3

VIZBARAYTE, Ya.I.; STROTSKITE, T.D.; YUTSIS, A.P., akademik

Generalized methods of Hartree and Fock. Dokl. AN SSSR 135 no.6:1358-1360 D '60. (MIRA 13:12)

1. Institut fiziki i matematiki Akademii nauk LitSSR.
2. Akademiya nauk LitSSR (for Yutsis).
(Wave mechanics)

VIZBARAYTE, Ya.L.; ERINGIS, K.K.; YUTSIS, A.I., akademik

Extended Hartree and Fock methods. Dokl. AN SSSR 135 no.4:809-810 '60. (MIRA 13:11)

1. Institut fiziki i matematiki Akademii nauk LitSSR. 2. AN LitSSR (for Yutsis).
(Wave mechanics)

YUTSIS, A. P.[Jucys, A.]; VIZBARAYTE, Ya. I.[Vizbaraite, J.]

Concerning the use of Fock equations, independent from the type of coupling. Liet ak darbai B no.1:65-73 '61. (EEAI 10:9)

1. Institut fiziki i matematiki Akademii nauk Litovskoy SSR i Vil'nyusskiy gosudarstvennyy universitet im. V. Kapsukasa.

(Equations) (Matrices)

S/020/60/135/006/011/037
B019/B056

AUTHORS: Vizbarayte, Ya. I., Strotskite, T. D., and Yutsis, A. P., Academician of the AS Litovskaya SSR

TITLE: Generalized Hartree-Fok Methods

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 6, pp. 1358-1360

TEXT: That improvement of the quantum-mechanical calculation of an atom is called multiconfiguration approximation, in which the wave function of the entire atom is expressed in the form $\Psi = N\sum_i \lambda_i \Psi_i$ (1), where Ψ_i is the wave function of the whole atom, λ_i is a factor determined by the variational principle, and N denotes a normalization factor. If Fok's variational method is applied to (1), equations of the generalized Fok method of the selfconsistent field or Fok equations in multiconfiguration approximation will be obtained. The transition from the solutions of the

Card 1/2

Generalized Hartree-Fok Methods

S/020/60/135/006/011/037
B019/B056

Hartree equation to such of the Fok equation is already an improvement, a further being the transition from the solutions of the ordinary Fok equations to such of the generalized Fok equations. From studying publications dealing with the generalized Fok method, the authors come to the conclusion that the solutions of equations of the generalized Fok method depend only slightly on the type of coupling. The independence of the Hartree methods of the type of coupling is caused by the use of a wave function of the whole atom as a variation. The authors suggest using solutions of the generalized Hartree equations in second configuration approximation. There are 12 references: 10 Soviet and 2 British.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk LitSSR (Institute of Physics and Mathematics of the Academy of Sciences Litovskaya SSR)

SUBMITTED: November 1, 1960

Card 2/2

24.6300

S/058/62/000/006/019/136
A061/A101

AUTHORS: Yutsis, A. P., Dagis, R. S., Vizbarayte, Ya. I., Zhvironayte, S. A.

TITLE: A more accurate definition of expressions for the matrix elements of spin-interaction operators

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 1, abstract 6V2 ("Tr. AN LitSSR", 1961, v. B3(26), 53 - 66, Lith. summary)

TEXT: Expressions have been obtained for radial integrals indicating the energy of spin-spin (magnetic) interaction of electrons in the atom. The characteristics of these integrals are established, and the inaccuracy of expressions for two-electron matrix elements of spin interaction, obtained earlier (Marvin, H. H. "Phys. Rev.", 1947, v. 71, 102; RZhFiz, 1960, no. 9, 22881) is pointed out. Tables compiled with appropriate calculations convey the corrections to be introduced in the papers mentioned above.

[Abstracter's note: Complete translation]

Card 1/1

24.6200

S/058/62/000/006/021/136
A061/A101

AUTHORS: Yutsis, A. P., Vizbarayte, Ya. I., Eringis, K. K.

TITLE: The use of an expanded calculation method for spectral line intensity determination

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 2, abstract 6V13 ("Tr. AN LitSSR", 1961, v. B3(26), 99 - 105, Lith. summary)

TEXT: Operators of electric dipole and quadrupole transitions are presented in the form of irreducible tensor operators which, in the case of a quadrupole, differ by a constant factor from the corresponding operator used in other studies. Relations are found which allow the passage from the conventional calculation method to the expanded method in determining the line intensity in configurations of two equivalent electrons. Numerical values of line intensities are given for $1s^2$ - 1s2p, $2p^2$ - 1s2p, $1s^2 2p^2$ - $1s^2 2s2p$ dipole transitions in a number of atoms and ions, and also for the $2p^2$ - $2p^2$ quadrupole transition in the carbon atom.

[Abstracter's note: Complete translation]

Card 1/1

L 17992-63 EWT(1)/FCC(w)/BDS AFFTC/ASD/IJP(C)

ACCESSION NR: AT3002102 S/2910/61/001/01-/0021/0032

AUTHORS: Vizbarayte, Ya. I.; Rudzikas, Z. B.; Budrite, S. D.; Yutsis, A. P.

TITLE: Contribution to the calculation of strength of the lines and of the selection rule for various types of vector coupling

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v.1, no.1-2, 1961, 21-32

TOPIC TAGS: vector coupling, electric multipole radiation operator, multiple interaction, dipole transition, multipole transition, selection rule j-coefficient, experimental spectroscopy, astrophysics

ABSTRACT: This theoretical paper develops expressions for the matrix elements of the operator of an electric multipole for the configurations: $l_1^{N_1} l_2^{N_2} - l_1^{N_1-1} l_2^{N_2+1}$, $l_1^{N_1} - l_1^{N_1-1} l_2$, and $l_1^{N_1} l_2 - l_1^{N_1} l_3$ for various types of vector coupling. Consideration is also given to those instances in which different types of coupling obtain in the initial and final configuration. Selection rules for the above-mentioned cases are established. They are expressed by triangle, quadrilateral, and pentagon rules which follow from the condition of nonvanishing of the j-coefficients which appear in the expressions of

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L 17992-63

ACCESSION NR: AT3002102

the matrix elements of the electric multipole radiation operator. The primary purpose of this paper is the study of transitions having a probability which is determined by highly complicated j-coefficients, a problem which leads to more complicated selection rules than have been investigated heretofore. Orig. art. has 34 numbered equations and formulas, and 3 tables.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, Academy of Sciences, LithSSR); Vil'nyusskiy gosudarstvenny*y universitet im. V. Kapsukasa (Vilnyus State University)

SUBMITTED: 13May61 DATE ACQ: 23Apr63 ENCL: 00

SUB CODE: AS, MM, PH NO REF SOV: 010 OTHER: 002

Card 2/2

L 18020-63 BDS S/2910/61/001/01-/0033/0037

ACCESSION NR: AT3002103

50
49

AUTHORS: Zhvironayte, S.A.; Vizbarayte, Ya.I.; Jucys, A. T.

TITLE: Contribution to the problem of types of vector coupling in a $p^2\ell$ configuration

SOURCE: AN Lit SSR. Litovskiy fizicheskiy sbornik. v.1, no.1-2, 1961, 33-37

TOPIC TAGS: vector coupling, configuration $p\hat{\ell}$, matrix elements, energy operator, spin-orbit interaction, electrostatic interaction, O, N, oxygen energy level, nitrogen energy level

ABSTRACT: This theoretical paper is a further development of a paper by the same authors in Akad. nauk LitSSR, Trudy, B, v.2(25), 1961, 53, in which an examination of the problem of the types of vector coupling for a configuration $p\ell$ permitted them to make certain conclusions on the regularities prevailing in the change of type of coupling following an increase in the degree of excitation. The present paper develops expressions for the diagonal and nondiagonal matrix elements of the energy operator of the spin-orbit interaction in the case of LS coupling and for the diagonal matrix elements of the energy operator of electrostatic and spin-orbit interaction in the case of LS_0 and J_0l coupling. The question of just what types of vector coupling prevail in specific examples is

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ACCESSION NR: AT3002103

examined in the case of O II and N I atoms with reference to the configuration $1s^2 2s^2 2p^2 4f$. The arrangement of the energy levels is compared for the experimental and for the LS_0 and the $J_0 l$ theoretical cases. A comparison of the experimental and theoretical data in the case of O II permits the conclusion that the LS_0 and $J_0 l$ couplings are equally suitable in the $2p^2 4f$ configuration. In the transition to N I the LS coupling is not suitable. It is possible that with the decrease in Z the transition to nonhomogeneous coupling occurs at lower degrees of excitation. Orig. art. has 4 formulas and 2 figures.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of physics and mathematics, Academy of Sciences, LithSSR)

SUBMITTED: 16May61 DATE ACQ: 23Apr63 ENCL: 00

SUB CODE: PH, MM, EL NO REF SOV: 005 OTHER: 003

Card 2/2

L 12622-63 BDS/EWT(1) AFFTC/ASD/ESD-3 GG/IJP(C)
ACCESSION NR: AP3000292 S/0020/63/150/001/0062/0063 59

AUTHOR: Vizbarayte, Ya. I.; Rudzikas, Z. B.; Yutsis, A. P. (Academician, AN LitSSR)

TITLE: The theory of restricted nebular lines corresponding to magnetic multifield transitions

SOURCE: AN SSSR. Doklady, v. 150, no. 1, 1963, 62-63

TOPIC TAGS: restricted nebular lines, relative intensities of restricted-lines

ABSTRACT: The possibility of creating a magnetic multifield operator of a rank and structure which will encompass all restricted nebular lines is presented. Presently the restricted lines which cannot be referred to the electrical dipole transitions are only partially referred to the electrical quadruplet fields and magnetic dipole transitions. However, a considerable portion of the restricted lines is not covered by the present theory. The problem of determination of the relative intensities of all these lines is solved by means of a generalized orbital moment of quantitative motion in combination with the spinning quantitative moment of motion.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk LitSSR (Institute of Physics and Mathematics of the Academy of Sciences Lithuanian SSR); Vilnyusskiy gosudarstvennyy universitet im. V. Kapsukasa (Vilnius State University)

Card 1/2

L 30072-65 EWT(l) Pe-5/Pq-4
ACCESSION NR: AT5002009 S/2910/64/004/002/0197/0212

AUTHOR: Yutsis, A. P. (Jucys, A.); Vizbarayte, Ya. A.; Karaziya, R. I.; Savukinas, A. Yu.; (Vizbaraite, J.); (Karazija, R.); (Savukynas, A.); Bandzaitis, A.

TITLE: Calculation of matrix elements of the electrostatic interaction operator for complex atoms

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 4, no. 2, 1964, 197-212

TOPIC TAGS: quantum mechanics, matrix, electron shell, electrostatic interaction, energy operator, quantum theory, wave function, Racah operator

ABSTRACT: [illegible] the calculation of the submatrix elements of [illegible] p- and d-electrons. [illegible] lation of the matrix elements of the operators. The present work is limited to consideration of the expressions for the matrix elements of the electrostatic interaction operator for the case of complex configurations. For simplicity, the case of two either partially filled or almost complete [illegible] is considered first. Then a method is developed for calculations in the case of any number of

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L 30072-65
ACCESSION NR: AT5002009

2

unfilled shells. The article first reviews the information on the unit tensor operators as described in the work of Racah (Phys. Rev. 62, 438 (1942); Phys. Rev. 63, 367 (1943)). The explicit formulae are given for two unfilled electron shells. In the case of three or four unfilled shells more general formulae are given, which permit easy calculation of the explicit formulae. In the case of almost filled shells, the relationships between [illegible] are [illegible] for which the number of parameters [illegible]. Their use becomes very simple since the tables are [illegible] equations. [illegible]

ASSOCIATION: Vil'yusskiy Gosudarstvennyy universitet im. V. Kapsukasa (Vilnius state university); Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Physics and mathematics institute, Academy of sciences, Lithuanian SSR)

L 44374-66 EWT(m)/T

ACC NR: AT6023218 SOURCE CODE: UR/2910/65/005/003/0315/0328

AUTHOR: Rudzikas, Z. B. --Rudzikas, Z.; Vizbarayte, Ya. I. --Vizbaraite, J.; Yutsis, A. P. --Jucys, A.

ORG: Institute of Physics and Mathematics of the Academy of Sciences of the Lithuanian SSR (Institut Fiziki i matematiki Akademii nauk Litovskoy SSR); V. Kapsukas State University Vilnius (Vil' nyusskiy Gosudarstvennyy universitet im. V. Kapsukasa)

TITLE: Further study of orbit-orbit interaction in atomic spectra

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik. v. 5, no. 3, 1965, 315-328

TOPIC TAGS: atomic spectrum, orbit orbit interaction, ion interaction, electron interaction, electron mirror, matrix element, integral operator

ABSTRACT: The expressions are given for two-electron matrix elements of the orbit-orbit interaction energy operation in the configurations l,l' at $l_1=0$, 1, and 2.

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L-44374-66

ACC NR: AT6023218

The coefficients of the radial integrals are expressed (by l') in terms of the orbital quantum number of one of the two electrons, the corresponding quantum number of the other electron being equal to 0, 1, and 2. A method of using mirror reflection symmetry for checking of the expressions is described. Some numerical values are determined for an orbit-orbit energy interaction of $Cl2_p3_p$ and for the series of atoms and ions whose configurations are 2_p^n(N=2, 3, 4) and $3d^n$(N=2, 3,.... 8). Orig. art. has: 3 tables and 12 formulas. [AM]

SUB CODE: 20/ SUBM DATE: 16Dec64/ ORIG REF: 008/ OTH REF: 006/

Card 2/2 hs

PETRLE,M.; PROCHAZKA,J.; ENDRYS,J.; BELOHRADEK,Z.; KOSMAK,J.; STEINHARDT,L.; VIZDA,J.

Recurrent tight mitral stenosis. Cor. vasa 6 no.2:104-111'64

1. 1st and IInd Internal Clinics, Surgical Clinic and Radiological Clinic, Faculty of Medicine, Caroline University, Hradec Kralove, Czechoslovakia.

TLUSTY, Lubomir; PETRLE, Miroslav; FIEDLEROVA, Dagmar; REZAC, Vladimir; VIZDA, Jaroslav; JURECKA, Jiri.

An attempt to determine some parameters of aging during routine clinical examination. Sborn. ved. prac. lek. fak. Karlov. Univ. 9 no.1:339-355 '64.

1. I. Interni klinika (prednosta: prof. MUDr. F. Cernik) Karlovy University v Hradci Kralove.

CERNIK, F., Dr.; LUKL, P., dr.; PROCHAZKA, J., dr.; VIZDA, J., dr.

Clinical experiences with nitrogen mustards. V. Therapy of malignant tumors. Cas. lek. cesk. 91 no.2:44-49 11 Jan 52.

1. Z interni kliniky v Hradci Kralove (prednosta prof. dr. Pavel Lukl).

(NITROGEN MUSTARDS, ther. use
neoplasms, malignant)
(NEOPLASMS, therapy
nitrogen mustards)

VIZDA, J.

VIZDA J.

Nase zkusenosti s lecbou chlorethylaminy. /Chlorethylamine therapy; treatment of bronchogenous carcinoma/ Cas. lek. cesk. 89:28 14 July 50 p. 801-3

1. Of the Internal Clinic in Hradec Kralove (Head--Prof. P. Lukl, M. D.).

CLML 19, 5, Nov. 50

CZECHOSLOVAKIA

VIZDALOVA, M.; PILLICH, J.; Biophysical Institute, Czechoslovak Academy of Sciences (Biofysikalni Ustav CSAV), Brno.

"Inactivation of Bacteriophages by Hydroxylamine and by UV Irradiation."

Prague, Ceskoslovenska Fysiologie, Vol 15, No 5, Sep 66, p 420

Abstract: The inactivation effect of hydroxylamine (HA) and of UV irradiation was studied on bacteriophages E. coli, T series. The mechanism by which HA affects the phages is different from the mechanism of UV irradiation. HA affects mainly the cytosineguanine pairs of DNA. Phages where cytosine is replaced by 5-hydroxymethylcytosine are more resistant to HA than other phages. The effect of the UV irradiation is due to the formation of thiamine dimers in the polynucleotide chains. 2 Western references. Submitted at the Meeting of the Czechoslovak Biophysical Section of the Branch of the Czechoslovak Biological Society at the Czechoslovak Academy of Sciences at Brno 19 Jan 66.

1/1

ZAKHARENKO, I.N., veterinarnyy vrach (Tyumenskaya oblast'); VIZE, A.A., veterinarnyy vrach (Tyumenskaya oblast')

Use of the foot-and-mouth disease virus vaccine type A made by the Siberian Veterinary Scientific Research Station. Veterinariia 42 no.5:46-47 My '65. (MIRA 18:6)

VIZE, V. Yu.

ISAKOV, I.S., prof., admiral flota v otstavke, otv.red.; SHULEYKIN, V.V., akademik, inzh.-kapitan 1 ranga, zamestitel' otv.red. po II tomu; DEMIN, L.A., dotsent, kand.geograf.nauk, inzh.-kapitan 1 ranga, glavnyy red.; ABAN'KIN, P.S., admiral, red.; VIZE, V.Yu., red.; GERASIMOV, I.P., red.; GLINKOV, Ye.G., inzh.-kontr-admiral, red.; DROZDOV, O.A., prof., doktor geograf.nauk, red.; ZOZULYA, F.V., vitse-admiral, red.; PAVLOVSKIY, Ye.N., akademik, general-leytenant meditsinskoy sluzhby, red.; POGOSYAN, Kh.P., prof., doktor geograf.nauk, red.; RUDOVITS, L.F., doktor geograf.nauk, red.; SKORODUMOV, L.A., kontr-admiral, red.; SHIRSHOV, P.P., akademik, red. [deceased]; BASHILOV, G.Ya., inzh.-kapitan 2 ranga, uchenyy sekretar'; SEREGIN, M.P., kapitan 1 ranga, red.kart; RYABCHIKOV, S.T., podpolkovnik, red.kart; YEGOR'YEVA, A.V., kand.geograf.nauk, red.kart; AVER'YANOVA, P.S., kand.geograf.nauk, red.kart; BUGORKOVA, O.S., red.kart; GAPONOVA, A.A., red.kart; DMITRIYEVA, T.V., red.kart; DOTSENKO, Ye.I., red.kart; KONYUKOVA, L.G., red.kart; KOMOLOVA, Ye.N., red.kart; LUKANOVA, L.S., red.kart; S[illegible]RNOVA, V.G., kand.geograf.nauk, red.kart; CHECHULINA, Ye.P., red.kart; SHKOL'NIKOV, A.M., red.kart; GRIN'KO, A.M., tekhn.red.; IVANOVA, M.A., tekhn.red.; MOROZOVA, A.F., tekhn.red.

[Marine atlas] Morskoi atlas. Otv.red.I.S.Isakov. Glav.red. L.A. Demin. Izd. Morskogo general'nogo shtaba. Vol.2 [Physical geography] Fiziko-geograficheskii. Zamestitel' otv.red. po II tomu V.V. Shuleikin. 1953. 76 maps. (MIRA 12:1)

1. Russia (1923- U.S.S.R.) Voyenno-morskoye ministerstvo. 2. Chlen-korrespondent Akademii nauk SSSR (for Vize, Gerasimov).
(Ocean--Maps) (Harbors--Maps)

CEROVSKY, Zdenek, inz., kandidat technickych ved; MRAZ, Vladimir, inz.; VIZEK, Eduard, inz.

A new series of control dynamos and motors for hoisting machines made by the national enterprise "Ceskomoravska-Kolben-Danek Praha". El tech obzor 51 no.10:519-526 O '62.

1. Ceskomoravska-Kolben-Danek Praha, n.p.

VIZEK, E., inz.

Fiftieth birthday of Zdenek Ledr. El tech obzor 52 no.12:696 D '63.

1. Ceskomoravska-Kolben-Danek.

VIZEK, E.

Electromagnets for research in atomic physics. p. 14

CZECHOSLOVAK HEAVY INDUSTRY. (Ceskoslovenska obchodni komora) Prague, Czechoslovakia. No. 6, 1959

Monthly List of East European Accessions (EEAI), LC, Vol. 8, No. 7, July 1959
Uncl.

VIZEK, E.

Electromagnet for measurement of cosmic radiation. p.310

ELEKTROTECHNICKY OBZOR. (Ministerstvo tezkeho strojirenstvi a Ceskoslovenske vedecka technicka spolecnost pro elektrotechniku pri Ceskoslovenske adaemii Ved) Praha, Cezechoslovakia
Vol.18, no.6, June 1959

Monthly List of East European Accessions (EEAI) LC, Vol.8, no.11,
Nov. 1959
Uncl.

LEDR, Z., inz.; VIZEK, E., inz.

Commemorating the 60th birthday of Antonin Bobek. El tech obzor 52 no.5:276 My '63.

1. Ceskomoravska-Kolben-Danek Praha.

HERVET, Vl., inz.; KVESEK, Mil., inz.; KVAS, Jul., Inz.; SVOBODA, Fr., Inz.; VIZEK, K., inz.

Pile foundation of the steel structure of halls of a machine metallurgy plant in India. Inz stavby 13 no.3:98-107 Mr '65.

KHLEBNIKOV, Nikolay Nikolayevich; VIKEL', A.A., otv. red.
KOMAROVA, Ye.V., red.

[Electronic devices] Elektronnye pribory. Moskva, Sviaz', 1964. 615 p. (MIRA 17:9)

L 5143-66 EWT(d)/EWT(l)/EWA(h)
ACCESSION NR: AP5026910

UR/0109/65/010/010/1907/1909
621.375.933.029.65

AUTHOR: Berlin, A. S.; Vizel', A. A.; Vystavkin, A. N.; Popov, Ye. I.; Khotuntsev, Yu. L.; Shtyrov, V. D.

34
B

TITLE: Parametric amplification in the 8-mm band

SOURCE: Radiotekhnika i elektronika, v. 10, no. 10, 1965, 1907-1909

TOPIC TAGS: parametric amplification, millimeter wave

ABSTRACT: In recently published articles (B. C. DeLoach, Proc. IEEE, 1963, 51, 8, 1153 and others) on millimeter-band semiconductor amplifiers, no characteristics have been reported. The present article describes the design and characteristics of and indicates an application for an 8-mm-band parametric amplifier. Coaxial-design epitaxial germanium diodes with 0.04—0.08-pf capacitance and 3—5-v reverse voltage were used in most experiments; critical frequency at a bias of -3 v was 280—430 Gc. The diodes operated as amplifiers at a low pumping power and an operating-point bias of 0.5—2 v. The diodes were tested within -60 + 85C; up to +60C, the leakage current at -1.5 v was 1 μamp or less. The new diodes were tested in a single-cavity 8-mm parametric amplifier (see Fig. 1 of Enclosure). The signal is applied via a tapered waveguide matching unit 1. Behind the diode 4, a short-circuiting section 2 is arranged whose length equals an odd number of

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ACCESSION NR: AP5026910

quarter-waves. The amplifier is tuned by a short-circuiting line 3 that has a characteristic resistance of 100 ohm. Transformer 5 serves for adjusting the coupling. With a gain of 20 db, the passband was 78 Mc and the noise temperature, 600 ± 150K. The parametric amplifier was used in a modulation-type radiometer whose fluctuation sensitivity was measured. Orig. art. has: 3 figures and 2 formulas.

[03]

ASSOCIATION: none

SUBMITTED: 23Jan65 ENCL: 01 SUB CODE: EC.

NO REFO SOV: 002 OTHER: 003 ATD PRESS: 4134

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L 5143-66
ACCESSION NR: AP5026910

ENCLOSURE: 01

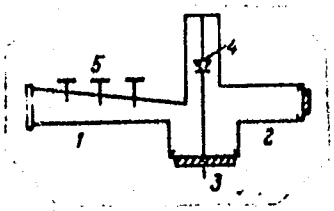

Fig. 1. A parametric semiconductor amplifier for the 8-mm band

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ARBUZOV, B.A., akademik; VIZEL', A.O.; ZAIKONNIKOVA, I.V.; STUDENTSOVA, I.A.; DUNAYEV, V.G.; ZVEREVA, M.A.; IVANOVSKAYA, K.M.

Organophosphorus compounds of low toxicity. Dokl. AN SSSR 165 no.1:91-94 N '65. (MIRA 18:10)

1. Institut organicheskoy khimii AN SSSR, Kazan', i Kazanskiy gosudarstvennyy meditsinskiy institut.

L 20705-66 EWT(1)/EWT(m)/EWP(j)/T RO/JK/RM

ACC NR: AP6012027 SOURCE CODE: UR/0020/65/160/004/0826/0828

AUTHOR: Vizel', A. O.; Zvereva, M. A.; Ivanovskaya, K. M.; Studentsova, I. A.; Dunayev, V. G.; Berim, M. G.

ORG: Institute of Organic Chemistry, AN SSSR, Kazan' (Institut organicheskoy khimii AN SSSR); Kazan' Medical Institute, Kazan' (Kazanskiy meditsinskiy institut)

TITLE: Synthesis and some properties of phosphacyclopentene derivatives

SOURCE: AN SSSR. Doklady, v. 160, no. 4, 1965, 826-828

TOPIC TAGS: organic synthetic process, toxicology, mouse, ester, antibiotic

ABSTRACT: Esters of cyclophosphinic acid were synthesized by reaction of 1-oxo-1=bromo-3-methylphosphacyclopentene-2 with corresponding alcohols in the presence of triethylamine in ether solution. Two acids were prepared by saponification of the corresponding acid bromides and recrystallized from acetone. One methyl ester was prepared by reaction of 2-oxo-2-chloro-3,3,5-trimethyl-1-oxaphosphacyclopentene-4 with methanol in the presence of triethylamine. Toxicity studies were run on white mice according to the Berens method; most of the compounds studied gave a monotypic picture of poisoning, similar to the action of narcotics. Lethal doses of the compounds studied produced a sharp inhibition and stoppage of respiration. The toxicity of the esters was found to increase with increasing length of the hydrocarbon radical. The action of the preparations was reversible, and after the mice awoke there was no effect on their general condition. The preparations were also investigated in vitro in 1:100 and 1:1000 dilutions on seven species of pathogenic microbes. The two free acids studied exhib-

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L 20705-66

ACC NR: AP6012027

ited the broadest range of antimicrobial action. This paper was presented by Academician B. A. Arbuzov on 27 July 1964. Orig. art. has: 3 tables. [JPRS]

SUB CODE: 06, 07 / SUBM DATE: 22Aug64 / ORIG REF: 006 / OTH REF: 007

Card 2/2 BK

S/081/62/000/018/048/059
B160/B186

AUTHORS: Vizel', A. O., Shermergorn, I. M., Tyulenev, S. S.

TITLE: Synthesis of polyethylene terephthalate

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 18, 1962, 503, abstract 18P62 (In collection: Materialy 1-y Konferentsii molodykh nauchn. rabotn. g. Kazani, 1959. Sekts. khim. Kazan', 1960, 27-34)

TEXT: Ways of reducing the amount of glycol brought into the reaction and of replacing purified N_2 by commercially pure N_2 or air were investigated in order to develop a technology for the production of polyethylene terephthalate (PETP) using terephthalic acid dimethyl ester (DMT) as the raw material. These investigations proved that the consumption of ethylene glycol can be reduced (from three mols to two) by introducing the DMT part at a time, and that it is possible to use commercially pure N_2 or air (instead of purified N_2), triphenyl phosphate (I) at the rate of 0.4-3% of the DMT being used as the antioxidant. The relation of the

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S/081/62/000/018/048/059
B160/B186

Synthesis of polyethylene ...

reaction rate and quality of the product obtained to the amount of I introduced was studied (the optimum amount of I being 0.75% of the amount of DMT). A new solvent (40% phenol and 60% dichlorethane), which has good solvent ability at about 20°C, was found for determining the molecular weight of the PETP from the viscosity and for fractionation of the polymer. [Abstracter's note: Complete translation.]

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L 62776-65 EWT(1)/EWT(m)/EPF(c) Pi-4 IJP(c) WW/GG/JAJ/RM
ACCESSION NR: AP5020615 UR/0020/64/159/005/1062/1065

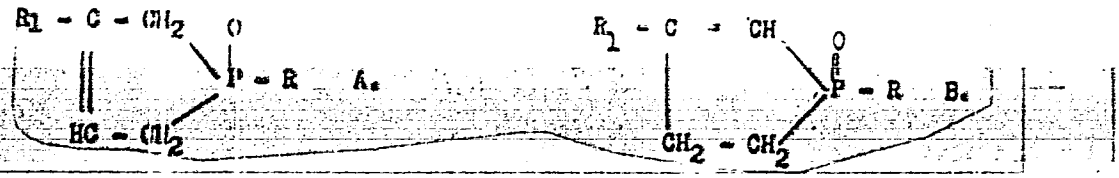
AUTHOR: Arbuzov, B. A. (Academician); Vizel', A. O.; Aykova, T. V.; Samitov, Yu. Yu.

TITLE: Structure and characteristics of nuclear magnetic resonance proton spectra [illegible]

SOURCE: AN SSSR. Doklady, v. 159, no. 5, 1964, 1062-1065

TOPIC TAGS: butadiene, hydrolysis, isoprene, nuclear magnetic resonance, proton

Abstract: Compounds of the general structural types A (I, R = Br, R_1 = H; II, R = Cl, R_1 = H; III, R = OMe, R_1 = H; IV, R = OEt, R_1 = H; VIII, R = OMe, R_1 = Me) and B (V, R = Br, R_1 = Me; VI, R = Cl, R_1 = Me; VII, R = OH, R_1 = Me) were synthesized.



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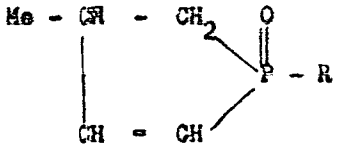
L 62776-65

ACCESSION NR: AP5020625

To prepare these compounds, methods described by B. A. Arbuzov et al in earlier publications were used. I and V were prepared from PBr_3 and the corresponding dienes (butadiene or isoprene). VI was prepared from isoprene and [illegible]. VII was [illegible] III, IV, and VIII were prepared [illegible]. II was prepared from butadiene and Et dichlorophosphite. For phosphacyclopentene derivatives derived from isoprene, three types of structure are possible, i. e., A, (R_1 = Me), B (R_1 = Me), and C:



It was established by determinations of proton nuclear magnetic resonance and double nuclear-nuclear (P - H) resonance spectra that V, VI, and VII had the structure A and VIII the structure B.

Orig. art. has 2 figures, 1 graph, and 3 tables.

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L 62776-65
ACCESSION NR: AP5020625

2

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR, Kazan'(Institute of Organic Chemistry, Academy of Sciences SSSR); Kazanskiy gosudarstvennyy [illegible] University

NO REF SOV: 006 OTHER: 003 JPRS

Card 3/3

L 55915-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 MM
ACCESSION NR: AP5018337 UR/0020/64/158/005/1105/1107

AUTHOR: Arbuzov, B. A. (Academician); Vizel', A. O.

TITLE: Monomeric cyclic trihalophosphoranes and some of their transformations. Syntheses based on phosphorus tribromide

SOURCE: AN SSSR. Doklady, v. 158, no. 5, 1964, 1105-1107

TOPIC TAGS: phosphorus halide, bromide, ester, organic phosphorus compound

ABSTRACT: Phosphorus dihalides react with dienes considerably more vigorously than organic derivatives, and adducts -- representatives of a previously unknown class of organophosphorus compounds -- cyclic trihalides -- are formed in good yield. Phosphorus tribromide reacts with dienes more vigorously than the trichloride; tribromophosphoranes are formed in better yields and in purer form than trichlorophosphoranes. The reactions with phosphorus trichloride are generally accompanied by great resinification. The reaction of equimolar amounts of the diene

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L 55915-65
ACCESSION NR: AP5018337

and phosphorus trihalide was conducted at 10-30°C, with copper stearate as inhibitor, under moisture-free conditions; the duration of the process varied from several hours to a month, depending on the nature of the diene. The tribromophosphoranes synthesized were found to react smoothly with acetic anhydride, forming bromides of cyclophosphinic acids in close to quantitative yield. Esters were produced by the reaction of the cyclophosphinyl bromides with alcohols in the presence of organic bases. The structures of the compounds obtained were confirmed by a study of their nuclear magnetic resonance spectra. Orig. art. has: 2 tables, 3 figures.

ASSOCIATION: Institut organicheskoy khimii Akademii nauk SSSR, Kazan (Institute of Organic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 22Jun64 ENCL: 00 SUB CODE: OC, GC

NR REF SOV: 006 OTHER: 003 JPRS

Card 2/2

ARBUZOV, B.A., akademik; VIZEL', A.O.; SAMITOV, Yu.Yu.; IVANOVSKAYA, K.M.

Derivatives of phosphacyclopentene. Synthesis and structure of isomers. Dokl. AN SSSR 159 no.3:582-585 N '64 (MIRA 18:1)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

ARBUZOV, B.A., akademik; SAMITOV, Yu.Yu.; VIZEL', A.O.; ZYKOVA, T.V.

Structure and certain features of proton nuclear magnetic resonance spectra of phosphacyclopentene derivatives with non-symmetrically located substituents in the cycle. Dokl. AN SSSR 159 no.5:1062-1065 D '64 (MIRA 18:1)

1. Institut organicheskoy khimii AN SSSR, Kazan', i Kazanskiy gosudarstvennyy universitet im. V.I. Ul'yanova-Lenina.

VIZEL', A.O.; ZVEREVA, M.A.; IVANOVSKAYA, K.M.; STUDENTSOVA, I.A.; LUNAYEV, V.G.; BERIM, M.G.

Synthesis and certain properties of phosphacyclopentene derivatives. Dokl. AN SSSR 160 no.4:826-828 F '65. (MIRA 18:2)

1. Institut organicheskoy khimii AN SSSR i Kazanskiy meditsinskiy institut.

KUZNETSOV, Ye.V.; VIZEL', A.O.; TYULENEV, S.S.; SHERMERGORN, I.M.

Stabilization of polyethylene terephthalate. Trudy KKHTI no.30: 82-88 '62. (MIRA 16:10)

KUZNETSOV, Ye.V.; VIZEL', A.O.; SHERMERGORN, I.M.; TYULENEV, S.S.

Relation between the molecular weight of polyethylene terephthalate and the viscosity of its solutions in a mixture of phenol and dichloroethane. Vysokom. soed. 2 no.2:205-209 F '60. (MIRA 13:11)

1. Kazanskiy khimiko-tekhnologicheskiy institut.
(Terephthalic acid)

ARBUZOV, B.A.; VIZEL', A.O.

Reactions of diazoacetic ester with phosphorous acid and its esters. Izv. AN SSSR. Otd.khim. nauk no.14:749-750 Ap '63. (MIRA 16:3)

1. Institut organicheskoy khimii AN SSSR, Kazan'.
(Acetic acid) (Phosphorous acid) (Esters)

ARBUZOV, B.A., akademik; VIZEL', A.O.

Monomeric trihalophosphoranes of the cyclic series and some of their transformations. Syntheses based on phosphorus tribromide. Dokl. AN SSSR 158 no.5:1105-1107 O '64. (MIRA 17:10)

1. Institut organicheskoy khimii AN SSSR, Kazan'.

ACC NR: AP6032859 SOURCE CODE: UR/0020/66/170/003/0585/0588

AUTHOR: Arbuzov, B. A. (Academician); Vizel', A. O.; Ivanovskaya, K. M.

ORG: Institute of Organic and Physical Chemistry im. A. Ye. Arbuzov, Academy of Sciences, SSSR (Institut organicheskoy i fizicheskoy khimii Akademii nauk SSSR)

TITLE: Phosphacyclopentene derivatives as catalysts in the synthesis of carbodiimides

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 585-588

TOPIC TAGS: organic phosphorus compound, imide, phosphinic acid, phosphonic acid, phosphate

ABSTRACT: The catalytic activity of various phospholene derivatives were studied by determining the rate constants of conversion of phenyl isocyanate into diphenylcarbodiimide. The CO_2 liberation rate served as the kinetic parameter. In all cases, the reaction was first order. The following series of catalyst activity in the synthesis of carbodiimides was arrived at: phospholenephosphine oxides > phospholenephosphinates oxides of noncyclic phosphines > phosphinates > phosphonates > phosphates. Despite the fact that the derivatives of phospholenephosphinic acid occupy the second place in the activity series, their activity is fully adequate for practical applications. The applicability of these derivatives to preparative synthesis is illustrated by the high yield of diphenylcarbodiimide from phenyl isocyanate in the presence of 1-ethoxy-1-oxo-

Card 1/2 UDC: 547.76:661.718.1:541.128

ACC NR: AP6032859

3-methyl-3-phospholene. Orig. art. has: 3 tables.

SUB CODE: 07/ SUBM DATE: 14Mar66/ ORIG REF: 005/ OTH REF: 022

Card 2/2

ACC NR: AP6033453 SOURCE CODE: UR/0413/66/000/018/0038/0038

INVENTOR: Arbuzov, B. A.; Vizel', A. O.

ORG: none

TITLE: Preparation of esters of ketophosphinic acids. Class 12, No. 185903

SOURCE: Izobret prom obraz tov zn, no. 18, 1966, 38

TOPIC TAGS: ketophosphinic acid ester, oxaphospholene derivative, phosphinic acid, ester, alcohol

ABSTRACT: To broaden the raw material base and increase the variety of the final products in esters of ketophosphinic acids, derivatives of 1,2-oxaphosphol-4-one are heated with alcohols at 160—170°C. [W.A. 50]

SUB CODE: 07/ SUBM DATE: 25Oct65

Card 1/1 UDC: 547.26'118.07

BREGER, A.Kh.; KAPLUNOV, M.Ya.; VAYNSHTEYN, B.I.; VIZEL', Ya.M.

Comparative evaluation of the effectiveness of various sources of nuclear radiation employed the process of radiation vulcanization of tires. Kauch.i rez. 19 no.14:17-22 Ap '60. (MIRA 13:12)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut imeni Karpova, Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i Moskovskiy institut khimicheskogo mashinostroyeniya.
(Tires, Rubber)
(Radiochemistry--Industrial applications)

VIZEL', Ya.M.; MOSTINSKIY, I.L.

Curving of a jet in a drifting flow. Inzh.-fiz. zhur. 8 no.2: 238-242 F '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy institut vysokikh temperatur, Moskva.

VIZEL', YA.M.

3

S/081/62/000/003/085/090
B162/B101

11.2211
15.9300

AUTHORS: Dogadkin, B. A., Tarasova, Z. N., Kaplunov, M. Ya., Breger, A. Kh., Kaparulina, L. M., Vaynshteyn, B. I., Vizel', Ya. M., Karpov, V. L.

TITLE: Intensification of the process of radiation vulcanization and technical principles of an experimental installation for radiation vulcanization of tyres

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 595 - 596, abstract 3P275 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. I", M., Gostoptekhizdat, 1961, 184 - 196)

TEXT: An investigation was made into the effect of medium (air and vacuum), temperature (from -196 to 100°C), sensitizers and inhibitors on radiation vulcanization under the action of Co^{60} γ - radiation of butadiene, butadiene-styrene and natural rubber. The degree of cross-linking in air is higher than in vacuum. In the presence of 2 % phenyl - β - naphthylamine the radiation-chemical yield of cross-links per 100 ev of absorbed

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Intensification of the process ...

energy drops by half for butadiene rubber in vacuum. The decrease in non-saturation is only partially explained by cross-linking and oxidation, and in the main this phenomenon is probably connected with the formation of intra-molecular rings. The cross-linking at different temperatures depends to a large extent on the structure of the rubber. Aliphatic polyhalides reduce the required radiation dose by half (to 25 Mr) and ensure the production of rubbers with a static strength equal to the strength of the best sulphur vulcanized rubbers. Vulcanization of rubbers containing carboxyl by the combined action of metal oxides and nuclear radiation (dose 10 Mr) gives vulcanized rubbers with high thermal stability and high strength properties. An investigation was made into the kinetics of the addition of styrene and 2,5 -dichlorostyrene to natural rubber and butadiene-styrene rubber and to mixtures of these with channel black with irradiation in Ar. An acceleration of vulcanization was observed in the presence of these monomers and vulcanized rubbers were obtained which possessed high thermomechanical stability and strength. The technical principles of a technological process for an experimental installation for radiation vulcanization of tyres are examined. Different types of γ-radiation sources were compared; radiation In-Ga loop of a nuclear reactor,

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3/081/62/000/003/025/039
B162/B101

Intensification of the process ...

spent-fuel assemblies, Co^{60} and different types of irradiators. A scheme is proposed for a technological process for an experimental installation with spent-fuel assemblies. [Abstracter's note: Complete translation]

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15-9120 1372

83838

S/138/60/000/004/004/008
A051/A029

AUTHORS: Breger, A.Kh., Kaplunov, M.Ya., Vaynshteyn, B.I., Vizel', Ya.M.

TITLE: A Comparative Evaluation of the Effectiveness of Various Sources of Nuclear Emissions for the Vulcanization Process of Tires by Irradiation

PERIODICAL: Kauchuk i Rezina, 1960, No. 4, pp. 17 - 22

TEXT: The use of nuclear energy has increased in chemical technology (Refs. 1 - 3, 5 - 7, 14). Rubber acquires new properties in vulcanization by irradiation. These vulcanizates have an elevated resistance to thermal and thermo-acidic aging, an elevated thermomechanical resistance and high resistance to repeated deformations. The importance of selecting the proper source of radiation in the radiation vulcanization of tires is stressed. The geometry of the emitter must be determined and the effectiveness of the different radiation sources must be evaluated. The purpose of this article was to solve these problems in order to apply the process of vulcanization by ir-

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83838

S/138/60/000/004/004/008
A051/A029

A Comparative Evaluation of the Effectiveness of Various Sources of Nuclear Emissions for the Vulcanization Process of Tires by Irradiation

radiation to the tubeless 6.70 - 15 tire of the "Volga" automobile. The following problems were investigated: 1) an evaluation of the field uniformity of the doses on the cross-section of the tread, 2) a computation of the radiation time at a given energy output of the emitter or estimating the energy output of the emitter according to the given vulcanization period (the energy of the emitter is taken to be the γ-emission energy), 3) determining the power efficiency factor in each individual case of the system's γ-emission efficiency output. The average integral dose of radiation needed for the vulcanization process was taken to be $25 \cdot 10^6$r (Refs. 6 - 8). Two types of emission sources were investigated, namely, a circulating contour (nuclear reactor-radiation installation) where the γ-emitter is an indium-gallium alloy with 16.5 atomic % of indium), and heat-emitting wastes of a 88 MW (VVR-Ts)-type nuclear reactor with a heat capacity of 10 Mw. Each source investigated is described in detail. As a result of the investigations several conclusions are drawn: 1) The comparative evaluation of the two sources for radiation vulcanization of tires showed that a circulating contour power efficiency factor ($\eta \sim 2.0\%$) had greater possibilities as a γ-emitter. There were

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S/138/60/000/004/004/008
A051/A029

A Comparative Evaluation of the Effectiveness of Various Sources of Nuclear Emissions for the Vulcanization Process of Tires by Irradiation

several technical difficulties, however, as compared to the waste product source. 2) When using waste products of a VVR - Ts type reactor, it was more expedient to design the emitter in the form of two parallel planes ($\eta \sim$ $\sim$0,3%). If the emitter is built in the form of 2 co-axial cylinders, $\eta \sim$ 0.2%. 3) The power efficiency factor of the γ-emission for the investigated cases can be increased if a special shape of the press-die is developed and a structural material chosen which ensures minimum absorption of the γ-emission. 4) The data obtained can be used as the basis for computing the apparatus of radiation vulcanization for test batches of tires. There are 5 diagrams and 15 references: 12 Soviet and 3 English.

ASSOCIATION: Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. Karpova, Nauchno-issledovatel'skiy institut shinnoy promyshlennosti, Moskovskiy institut khimicheskogo mashinostroyeniya (Scientific Physical-Chemical Research Institute imeni Karpov Scientific Research Institute of the Tire Industry, Moscow Institute of Chemical Engineering)

Card 3/3

L 30052-65 EWT(1)/EWP(m)/EPR/FCS(k)/EWA(1) Pd-1/Ps-4 WW

ACCESSION NR: [illegible] A/0062/0238/0242

AUTHOR: Vizel', Ya. M.; Mostinskiy, [illegible]

TITLE: Curvature of a jet in a [illegible]

SOURCE: Inzhenerno-fizicheskiy zhurnal, v. 8, no. [illegible], 1965, [illegible]

TOPIC TAGS: jet mixing, jet curvature, deflecting flow, gas jet, jet calculation

ABSTRACT: The curvature of axes of plane and circular gas jets in a deflecting gas flow was studied as a part of the jet mixing problem. Mathematical transformations of the momentum equation on the basis of jet drag values yielded new equations for calculating the curvature of plane and circular gas jets in a deflecting [illegible]. Results of calculated by the new equations compare favorably (within 20%) with published experimental data obtained under the same conditions. Orig. art. has: 3 figures and 20 formulas. (FS)

ASSOCIATION: Nauchno-issledovatel'skiy institut vysokikh temperatur, Moscow (Scientific Research Institute of High Temperatures)

Card 1/2

L 30052-65

ACCESSION NR: AP5020623

SUBMITTED: 13May65

NO REF SOV: 008 OTHER: 001 ATD PRESS:

MAYZEL', TS.G., inzh.; VIZEL'BERG, M.B., inzh.; SHKURKO, L.V., inzh.

Nickel plating in the presence of sodium fluoride. Khim.mashinostr. no.4:37 Jl-Ag '63. (MIRA 16:9)
(Sverdlovsk--Nickel plating) (Sodium fluoride)

VIZEL'BERG, M.B., inzh.

Zinc plating of machine parts in ammoniated electrolytes. Khim. mash. no. 1:43 Ja-F '61. (MIRA 14:1)
(Zinc plating) (Ammines)

S/184/61/000/001/009/014
A104/A029

AUTHOR: Vizel'berg, M.B., Engineer

TITLE: Galvanization in Ammoniate Electrolytes

PERIODICAL: Khimicheskoye Mashinostroyeniye, 1961, No. 1, p. 43

TEXT: The author describes a galvanizing method introduced in the Uralkhimmash, zinc-plating of steel and cast iron parts in ammoniate electrolytes. The preliminary operations are the same as for electroplating, i.e., scouring on the anode in a solution containing 900-1,100 g/l sulfuric acid at room temperature and a current density of 5-10 amp/dm^2. for 1-2 min. Zinc-plating is carried out in an electrolyte containing 12-20 g/l zinc oxide, 240-260 g/l ammonium chloride, 20-22 g/l boracic acid and 1-2 g/l joiner's glue at room temperature at a current density of 0.8-1.0 amp/dm^2. The freshly prepared electrolyte is treated at a current density of 0.5-0.8 amp/dm^2 on iron sheets, filtering 1-2 amp/h of current per liter of solution. Zinc-plated parts approved by OTK are clarified in 3% nitric acid, then passivated in a solution of 200 g/l sodium bichromate and 8-10 ml per liter of sulfuric acid (specific gravity 1.84). For more

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decorative results passivation should be carried out in a solution of 150 g/l chromium anhydride, 20 ml per liter of nitric acid (specific gravity 1.345) and 20 ml per liter of sulfuric acid (specific gravity 1.82) at room temperature for 5-10 sec.

L 17435-63 EWP(q)/EWT(m)/BDS AFFTC JD/JW

ACCESSION NR: AP3005541 S/0184/63/000/004/0037/0037

AUTHORS: Mayzel', Ts. G.(Engineer); Vizel'berg, M. B.(Engineer); Shkurko, L. V. (Engineer)

TITLE: Nickel-plating in the presence of sodium fluoride

SOURCE: Khimicheskoye mashinostroyeniye, no. 4, 1963, 37

TOPIC TAGS: sodium fluoride, nickelplating, porosity

ABSTRACT: The introduction of sodium fluoride into nickel electrolyte causes the precipitation of iron, thus improving the quality of nickel plate and reducing its porosity. A 5g/liter solution of sodium fluoride is thoroughly mixed with the electrolyte. This operation is performed once per month and is followed by filtering the electrolyte through cloth.

ASSOCIATION: Uralkhimmash zavod (Uralkhimmash Factory)

SUBMITTED: 00 DATE ACQ: 21Aug63 ENCL: 00

SUB CODE: ML NO REF SOV: 000 OTHER: 000

Card 1/1

VIZEL'MAN, B.A., inzh.; RIDER, Ye.Ya.

Accelerated delivery of mineral fertilizers. Zhel. dor. transp. 46 no.4:74-77 Ap '64. (MIRA 17:6)

1. Nachal'nik gruzovogo otdela Moskovsko-Rizhskogo otdeleniya Moskovskoy dorogi (for Rider).

MARTYNENKO, D.I., inzh.; RIDER, Ye.Ya.; VIKEL'MAN, B.A., inzh.

Advanced technology reduces the idle time of local cars.
Zhel.dor.transp. 46 no.12:65-66 D '64.
(MIRA 1931)